A TREATISE OF THE FIRST PART OF CHIRURGERIE, CALLED BY MEE Συνθετικὴ, THE PART WHICH TEACHETH THE REunition of the parts of the bodie disjoyned.

CONTAINING THE methodical doctrine of Wounds; delivered in Lectures in the Barber-Chirurgeons Hall, upon Tuesdayes, appointed for these Exercises, and the keeping of their Courts.

By ALEXANDER READ, Doctor of Physick, a Brother of the same Company, and one of the Fellowes of the Physitians College of the famous Citie *London*.

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TO THE RIGHT HONOURABLE AND HIS MUCH RESPECTED

Lord, PHILIP HERBERT Earle of *Penbrooke* and *Montgomery*, Baron HERBERT of *Cardiffe* and *Shurland*, Lord *Parr* and *Roos* of *Kendall*, *Marmion*, and S^t. *Quintin*, Warden of the Stannaries in the Counties of *Cornwall* and *Devon*, Chamberlaine of the Houſhold to our dread Soveraigne Lord King CHARLES, Companion of the moſt Noble Order of the Garter, and one of his Majeſties moſt Honourable Privie Counſell.

SOME things there are which move every one who goeth about to publiſh any monument of his skill, knowledge, or experience, to dedicate it to ſome perſon, whom the Author beſt liketh of: for partly the excellency and eminency of the perſon induceth him to do ſo: partly that the worke may be the ſooner accepted of, and entertained by the Readers: partly,

that by it the tongues and pens of calumniators may bee stayed: partly to expresse a thankfull minde for some benefit received: and lastly, to be a pledge of former acquaintance and love.

The first three considerations have emboldened mee to present to your Honour this my *Treatise of Wounds*. I am loth to write a Panegyrick of the gifts which God hath bestowed upon you, which are either of the minde, bodie, or fortune, (as they are by the heathenish phrase termed) lest I should seeme to some to flatter. Your employments in his Majesties affaires, are sufficient witnesses of your wisdome, discretion, affabilitie and magnanimitie. If any will turne his eyes and minde to the consideration of the gifts of the body, hee shall find it endowed with such as surpasse those which may bee found in most, even of the inferiour ranke. The frame of it is comely, the stature proportionate: the temperature and strength are such, as that they are sufficient for the dispatching of the weightiest businesses, and hardest employments. As

for

for the externall or gifts of fortune, your Honour hath them in such a measure, as that they exempt you from the number of such as must bee beholden to others, and make you able to oblige others to you, whereof there is no small number, who almost daily have accesse to your Honour. All these gifts your noble Birth, who are descended from memorable and famous Progenitors, doth commend and grace. The premisses being considered, I make no doubt but that the booke which beareth your title in the beginning, will be more acceptable to those who meane to peruse it, and lesse subject to the calumnies of maligne censurers. They will bee loth to meddle with that whereof you have vouchsafed to be a Patron.

Besides all these motives, the favourable respect which I ever hitherto have found, when I had occasion to use your Honour in my lawfull businesses, hath deserved some expression of a thankfull mind at least. And seeing I may despaire to performe this dutie by any other means, than by the fruits of the

minde; I am enforced at this time to present this meane Treatise of Wounds to your Honour, which you will (I hope) accept of, although it be a present much inferiour to the worth of your Person; seeing it doth proceed from one who is an unfained reverencer of your good parts, and heroicall vertues. Which only remaineth, I wish unto you long life, to the good of the Common-wealth, and the comfort of those who attend upon you; Health, and all other happinesse, and will ever rest

Your Honours to command in all offices, wherein he may be employed,

ALEXANDER READ.

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The Table of Wounds.

Of the doctrine of Wounds, there are two parts:

1. Containeth the generall doctrine of Wounds. This hath three members:
   - 1. Setteth downe the nature of a Wound, shewing
     - 1. What a Wound is.
     - 2. The maine differences of Wounds, and so they were
       - Either knowne to the Ancients, and these are
         - Either simple,
         - or compound, and these are
           - Either Milde,
           - or Maligne, caused
             - Either by a poisoned weapon,
             - or bitings, or stingings of venomous beasts.
       - or unknowne to the Ancients: and these are Wounds made by Gun-shot.
   - 2. Sheweth how the wounds of the severall parts of the body, which require a speciall consideration, are to be cured: as for example, the wounds of the
     - Ventricles, which are
       - Head.
       - Breft.
       - Belly.
     - Extremities,
       - Armes.
       - Legges.

LECTVRE I.

Of the description of a wound, the differences, and of the generall fountaines of the speciall prognostications.

IN the last Lecture which I delivered unto you, from this seat immediatly before the vacation from these exercises, I shut up the doctrine of ulcers, which was the second treatise of the first part of Chirurgerie, called by mee Συνθετικὴ, which teacheth the unition of parts disjoyned. Now order of doctrine doth require that I discourse of wounds in like manner: whereby the apparent solution of the unitie of the soft parts of the body is procured, as well as by ulcers.

Of this Treatise there shall be two parts. In the first I will set downe those things which concerne wounds in generall. In the second part, I will shew how the wounds of the severall parts of the body, which require speciall consideration, are to be cured. The parts of this Treatise.

In the generall doctrine concerning wounds, I will set downe these three things; The first shall be of the nature of a wound: the second of the generall prognosticks of curation: the third shall be of the last scope of the Chirurgeon. The nature of a wound is made manifest by setting downe, first Three things set downe in the generall doctrine.

what a wound is; secondly, which be the maine differences of wounds. In shewing what a wound is, first I must deliver the denomination of it: Secondly, the description of it.

The denominations of a wound.

A wound so called in English, in Latine is tearmed *vulnus*, and in Greeke τραῦμα. Now to set downe the varietie of the descriptions which are assigned by Authors, who have delivered monuments of this subject to posteritie, it would prove a taske more laborious than fruitfull: And the examination of them would serve rather for ostentation, than edification. Most of them which are set downe by the moderne Writers, will not endure the triall of the lawes required by Logicians in a good definition. Wherefore seeing when I first began to read, I promised to acquaint you with materiall points, only of those subjects which afterward I should handle, I will leave the refutation of the escapes committed by Authors in this matter, which only teacheth what is not to be learned. *Hieron. Fabricius ab aquapendente Chirurgiæ suæ part. secunda lib. 2. c. 1.* thus defineth a wound.

1 Description.

It is a solution of continuitie caused in a soft part of the body by an externall instrument: for explication of himselfe hee addeth: By a soft part I understand every substance of the body the bones being excepted.

The examination of this definition.

But by his good leave, as a solution of unitie in the bone caused by erosion, and putrifaction, is called ῥῆξις, or *caries*, and if it be caused by a violent but blunt externall instrument, it is called κάταγμα, or *fractura*; so if a solution of unitie be procured in it by a sharp inciding instrument, it may be called τραῦμα, or *vulnus*, a wound. Truly *Hippocrates* in his fixt section in his treatise of wounds of the head thus speaketh: *Vulnerum ossis capitis tot sunt genera:* Of the wounds of the bone of the head, so many sorts there are &c. Besides this in adding to a cariositie of the bone caused of a corrupt humour, and to a fracture procured by the violence of a blunt instrument, a wound inflicted by a sharp instrument inciding, the discourse will be more methodicall and plaine:

To

To the end then that you may fully know the nature of a wound, receive this deſcription of it.

A wound is a ſolution of unitie, cauſed by an externall inſtrument inciſing in any part of the body. In this deſcription you are to note theſe foure things; the firſt is the *genus*, the ſecond is the efficient cauſe of it, the third is the ſubject of it, the fourth is the manner of making a wound: The *genus* is comprehended in the firſt words, where it is ſaid to be a ſolution of unitie; for this is common to a tumor, ulcer, wound, fractures of the bones and luxations of the ſame, for in all theſe there is a ſolution of unitie, the efficient cauſe is ſaid to be an externall inſtrument: An externall inſtrument, I call that which is without the *cuticula* or ſcarſe skin, and hath no coherence or familiarity with the parts of the body, as a ſword or knife. By the efficient cauſe it is diſtinguiſhed from an ulcer; for as an ulcer is procured by a ſharp internall humour eroding: So a wound is cauſed by a ſharp externall inſtrument inciſing. The ſubject wherein the wound is received, I affirme to be any part of the body, whether the part be externall, as when the head is wounded with a ſword; or internall, as when the ſtomack is cut either by a peece of glaſſe, or a Diamond ſwallowed, they being ſharp-edged or pointed: And if the bone be inciſed, as well as the ſoft parts, a ſolution of unitie in it is called *vulnus*, a wound, againſt *Fabricium ab aqua pendente*. The manner of inflicting a wound is termed by mee inciſion, or diviſion by cutting: and this terme doth make the difference betweene a wound and a contuſion: for as a contuſion is cauſed by a blunt inſtrument forcibly ſeparating; ſo a wound is inflicted by a ſharp inſtrument inciſing. So you have the deſcription of a wound, and the explication of every part of it briefly ſet downe: By the which you may examine the definitions of others who have written of this ſubject, when you ſhall take them into your hands. The ſecond point which I affirmed fully to make up the nature of a wound was of the differences of it. And in ſetting downe of theſe, expect not

2 Deſcription.

The difference betweene an ulcer and a wound.

The difference betweene a contuſion, and a wound.

the full enumeration of all which may be named, as those taken from the quantitie, whereby a wound may be called great or small: or from the time and continuance, from whence a wound may be said to be new or old, and such like, which must be touched in the prognosticks of every particular wound: Only I will deliver such as are taken more inwardly from the nature of a wound. Then a wound is either such a one as was knowne to the ancient Writers, or was unknowne: The wounds knowne to the Ancients are either simple or compounded: The compounded are either milde or maligne: The maligne are caused either by a poysoned weapon, or bitings or stingings of venomous creatures. The wounds which were not knowne to the Ancients, are those which are made by gun-shot. Here you have the requisit and necessary differences of wounds, which doe cause some variation in the curing, represented to the eyes of your minde, as in a table, which in my proceeding I meane to handle exquisitly. So much then shall be sufficient to have beene set downe concerning the nature of a wound, which I affirmed in the beginning to be manifested, by delivering the description of a wound, and the divers kinds of it: Now it followeth that I speake of the second generall point, to wit, of the generall prognosticks of curing of wounds. Whensoever then a wounded person is presented unto you to foretell the event without errour, you are to consider that wounds are two fold: for they are either milde, which are easily cured, as a small wound in a fleshy part; or they are grievous, and cured with some difficultie at the least. Grievous wounds are either *Periculosa*, or *Malefica*, or *Lethalia*, or *Difficilia*. *Periculosa*, or dangerous wounds, are such as sometimes are cured, although for the most part they bring death; such are superficiall wounds of the braine. *Difficilia*, or wounds of hard curation, are such as may be cured if they be skilfully dressed, but if they be not handled by a cunning Chirurgion, remaine uncured; as some penetrating wounds of the breast. *Malefica*, or mischievous wounds, are

The differences of wounds.

Diversities of wounds.

1

2

3

are such as leave a hurt still after them when they are cured: such is that wound by the which a muscle is cut transverse quite asunder; for then the use of that part is taken away, which was moved by that muscle.

Lethalia, or deadly wounds, are such as bring inevitable death: such are wounds which divide the great vessels neere to the liver or heart. So the noble D. of *Buckingham* was dispatched by a wound which he received in the *arteria venosa*. 4

If you would know to which of these a wound which is offered to you to be cured, is to be referred, you must diligently examine these foure things: First, the part affected. Secondly, the adjuncts of the wound. Thirdly, the habit of the body. Fourthly, the things not naturall. How we may reduce a wound to one of these kindes. Things to be considered in a part wounded.

As for the part, you are to consider, First, its dignity: Secondly, its substance: Thirdly, the temperature: Fourthly, the situation of it: Fifthly, the quantity, in the bignesse and number: Lastly, the use of the part.

Adjuncts to be considered in a wound are these: The bignesse, the figure, the situation, the symptomes, and last of all other diseases complicate with the wound, as the French pox, or dropsie, &c. The adjuncts of wounds.

As for the habit of the body, you are to consider whether it be good or ill, of a loose or a firme substance, whether it be full or extenuate: neither is the temperature of it to be neglected. The habit of the body.

As for the things not naturall, as ayre, meat, and drinke, sleeping and watching, and the rest of them, I will shew the use of them when I am come to the consideration of every particular wounds. The things not naturall.

Now it followeth that I shew you the use of these prognosticall springs or fountaines, by setting downe some predictions derived from them. Predictions drawne from the forenamed prognosticall springs.

First, a noble part, the beginning of a faculty in continuall motion, the body being of an ill habit, receiving a great wound, must of a necessity cause death: by induction I will make this manifest. 1

2 Secondly, the heart being deeply wounded, cauſeth either a ſuddaine or ſpeedy death. Firſt, becauſe it is a principall part: Secondly, becauſe the naturall faculty proceedeth from it: Thirdly, becauſe it is in continuall motion: Fourthly, becauſe it is of a hard and compact ſubſtance, and ſo not ſo eaſily united: Fiftly, becauſe it is a very hot part, and ſo very ſubject to inflamation: Sixtly, becauſe it is ſingle, and there is no other part which can performe the function of it.

Vide 1. ipp. 6. Aphor. 16.

3 Thirdly, the wounds of the brain in like manner are deadly, if they penetrate to the baſis; becauſe it is a principall part, the well-ſpring of the animall faculty, in continuall motion, and becauſe inflamation, and a ſharpe fever enſueth. If the wound of the braine be onely ſuperficiall, it is to be accounted onely dangerous; partly becauſe the motion is gentle, partly becauſe the ſubſtance of the part is ſoft, and ſo apt to receive conſolidation.

4 Fourthly, ſmall wounds of the liver, although they be dangerous, yet they may admit conſolidation: Firſt, becauſe the ſubſtance of the liver is like coagulate blood, and ſo may eaſily be united: Secondly, becauſe if one part of it be wounded, the other will performe ſanguification; as we may obſerve in thoſe, the part of whoſe liver is poſſeſſed with a ſcirrhous tumor.

5 Fifthly, a wound received in the *vena cava*, within the belly or breaſt is deadly: Firſt, by reaſon of the uſe of it; for it doth furniſh naturall blood to the whole body: Secondly, by reaſon of its ſubſtance; for being nervous, it hardly admitteth conſolidation: Thirdly, by reaſon of the ſituation of it; for a Chirurgeon can hardly come to it to apply any locall medicaments.

6 Sixthly, wounds in the fleſhy part of the *diaphragma*, or midriffe, are dangerous: Firſt, becauſe we cannot come to dreſſe them: Secondly, becauſe it is in continuall motion: Thirdly, becauſe the parts within the breaſt are eaſily inflamed. But if it be wounded in the nervous part, inevitable death enſueth: becauſe a *delirium* by reaſon of the inflamation alwayes

wayes doth ensue, and sometimes a Convulsion.

Seventhly, Wounds of the lungs are sometimes deadly, if a great vessell in them be divided, as the *vena arteriosa*. Yet if the party live, they prove most commonly mischievous, leaving a fistula: of the curation of which I discourſed in my Lectures of Ulcers, 1634. 7 See Galen. 5. Method. c. 9.

Eighthly, wounds of the spleene, if they be not great, and procure not an hemorrage, they are not deadly; because it is neither a principall part, nor the beginning of any faculty, but onely appointed by nature to be a receptacle of fæculent and blacke melancholy blood. 8

Ninthly, wounds of the *cystis fellis* bring death at the last, although slowly. First, because we cannot come to it conveniently to apply fit medicaments: Secondly, because it is of a nervous substance, which doth not easily admit unition. Thirdly, because the humor which it ought to containe untill the time of excretion, corrupteth the parts unto which it is sent. 9

Tenthly, a wound in the mouth of the stomacke is grievous: First, because it is of an exquisite sense: Secondly, because fearfull symptomes, as swonnings and faintings do ensue: Thirdly, because there must be a difficulty of swallowing. 10

Eleventhly, wounds of the kidneyes, if they passe not to the cavity, bring not inevitable death: yea some are of opinion that νεφροτομία, that is, extraction of stones out of the kidneyes by incision, may safely be administred. Of this operation I will speake in it owne place. 11

Twelfthly, wounds of the small guts are for the most part deadly: First, because they are of a membranous substance: Secondly, because they are of an exquisite sense. But wounds in the thicke guts are more easily cured, because their substance is more thicke, and so admitteth more promptly agglutination; and being not so sensible as the small guts are, faintings and other fearfull symptomes doe not so frequently invade. 12

Lastly,

13 Laſtly, if one be wounded in the Meſentery, inevitable death muſt enſue: Firſt, becauſe there muſt be a great flux of blood by reaſon of the multitude of the veines in it: Secondly, becauſe we cannot eaſily come thither to apply locall meanes: Thirdly, becauſe the chylus is ſtayed from paſſing to the liver to be made blood, and ſo ſanguification is hindered, without the which the body cannot ſubſiſt.

Examples of *maligna vulnera.*

I did affirme ſome wounds to be *maligna*, or miſchievous, which leave ſome hurt or imperfection in the parts after they are cured: of ſuch receive theſe examples following.

1 Firſt, a wound above the eye browes, with a fracture of the ſcull, when the wound is incarnate, it can hardly be brought to a cicatrice.

2 Secondly, if the braine be remarkably wounded, the party remaineth fooliſh, and more ſtupid than he was before.

3 Thirdly, if the bottome of the ſtomach be wounded, imbecillity and weakneſſe of concoction enſueth.

4 Fourthly, if a nerve or a ligament which tyeth bones together, or a muſcle be tranſverſly cut aſunder, motion is hindered.

5 Fifthly, when the *Glarea*, or the ſubſtance which is found in the great joynts to moiſten them, reſembling the whites of egges, is let out by a wound, the joynt groweth ſtiffe, and ſo the motion is impaired.

LECT. II.

Of the meanes of ſtaying an immoderate flux of blood in a wound.

HAving in the former Lecture ſet downe the two firſt points of the generall doctrine of wounds, to wit, the nature of a wound, and the fountaines from whence the prognoſtickes of wounds are fetched; and having by propounding ſome examples ſhewed the practice of them: now I am to ſet downe the third generall point, which is the laſt ſcope

and

and end which the Chirurgeon doth propoſe to himſelfe when he goeth about to cure any wound; and that is the unition of the parts disjoyned, The union of parts ſeparated.

Firſt then I will ſet downe the divers ſorts of unition or union of the parts; then the cauſes which procure this union. The differences of union.

Of union then there are two kindes: the firſt is called *ſymphyſis*, or agglutination, or concretion. The ſecond is named *ſyſſarcoſis*, colligation, or concarnation. *Symphyſis* is the unition of parts disjoyned, no middle ſubſtance concurring. This kinde of union is ſaid by the Chirurgeons to bee performed by the firſt intention. And if the terme of the firſt intention or ſcope were not ſo to be taken, that would be abſolutely falſe which *Hippocrat. 6. Aphoriſm. 19.* affirmeth, that the *præputium* or foreskin being cut aſunder, doth not admit unition. But it is not to bee doubted but that it will admit conſolidation by a fleſhy ſubſtance uniting the parts disjoyned: although this cannot be done by meere agglutination. And whereas *Galen 90. art. Medic.* averreth union in the inſtrumentary parts to bee impoſſible; to make this good which he affirmeth, we muſt obſerve one thing, that in this place an inſtrumentary part is not taken in it ampleſt ſignification, by the which it comprehendeth all parts which are miniſteriall to other parts: and ſo the veines and arteries are inſtrumentary parts, becauſe they ſerve the livor and heart for the diſtribution of the naturall blood and ſpirit, and the vitall blood and ſpirit for the maintenance and good of the body. But an inſtrumentary part is here taken as it is oppoſite to a ſimple part: for all the parts of the body are either ſimple, as the fleſh, veines, fibres, &c. or compound or inſtrumentary, as a finger; and ſo inſtrumentary parts taken in this ſignification are not united by *ſymphyſis*, they being wounded; but by *ſyſſarcoſis*, that is, not after the firſt, but ſecond intention. And ſo *Galen in 91. cap.* following doth explicate himſelfe: where talking of a wound in a bone, hee ſaith, But if a bone ſuffer ſolution of unity, it cannot be united, as I ſaid: and he addeth this clauſe, Yet it may be united by the ſecond I The firſt intention.

ſcope. He meaneth by the growing of a fleſhy ſubſtance betweene the parts of the bone ſevered.

Queſt. But you may demand of me what parts admit unition by *ſymphyſis*, or the firſt intention.

Anſwer. I anſwer, that the fleſhy parts disjoyned, admit this ſort of conſolidation in all the periods of the life, and the ſpermatick parts before the ſeventh yeare be expired, the bone being excepted: but they are onely united by the ſecond intention after the ſeventh yeare expired.

2 The ſecond kinde of unition of parts ſevered by a wound is called by *Galen de comp. med. ſecund. loc. cap. de plaga*, *Suſſarcoſis*: and it is nothing elſe but the union of parts disjoyned by a middle ſubſtance. Now this ſubſtance is ſometimes like to the parts which it uniteth, as in wounds in fleſhy parts: or it reſembleth not the parts which it uniteth, as in the wounds of the ſpermaticke parts after the ſeventh yeare.

The cauſes of union. Having delivered unto you the two kindes of the union or conſolidation of parts ſeparated by a wound, now I am to come to the cauſes of unition or conſolidation of the parts ſeparated. Theſe cauſes are either efficient cauſes, or inſtrumentary.

1. Efficient Nature. The efficient cauſes are two, to wit, Nature, and the Chirurgeon. Nature out of all doubt is the chiefe efficient cauſe, for ſhe ever labouring to preſerve her ſelfe, ſendeth unto the parts of the body ſo much of the naturall balſame of it as is ſufficient to unite the parts disjoyned. If you would know what I meane by the terme of the naturall balſame, I meane the radicall and alimentary moyſture, the ſeat of the naturall heat, by the which two every *individuum* or ſingular perſon is maintained, and ſubſiſteth.

The foure impediments of nature. Now there are foure things which may hinder nature from effecting of the union of the parts disjoyned: The firſt is an evill conformation; as when the brimmes of a wound are not proportionally and handſomly united and ſet together. The ſecond is the continuance of this ill conformation. The third is an unnaturall body remaining in the wound: this unnaturall body is either unnaturall by event, as a ſhiver of a

bone

bone ſeparated from the hole, or by it owne nature; as when a peece of weapon which wounded doth ſtick in the wound. The fourth is the diſtemperature of the wounded part: for if it be either too hot, or too cold, the diſtemperature muſt bee removed, and the naturall temperature reſtored, before that unition can be expected or procured.

The ſecond efficient cauſe of the unition of the parts ſevered by a wound, I affirmed to be the Chirurgeon: he is the miniſter, not the Lord of Nature, and is onely to further her deſignes, and to labour to remove the lets and impediments which may hinder her from attaining to her purpoſe, which is the reſtitution of the parts disjoyned to their naturall union. The Chirurgeon then is to performe ſome duties. Now theſe duties are either common to both the kinds of unition, to wit, *ſymphyſis* and *ſyſſarcoſis*, or they are proper to each. The common duties are in number ſeven. Firſt, the ſtaying of the blood. Second, the removing of ſtrange bodies from the wound. Third, the proviſion that no ſuch bodies fall into the wound. Fourth, that he maintaine the naturall temperature of the part. Fifth, that he reſtore it if it be loſt. Sixt, the conſideration of the quittour and excrements, which flow from the wound. Seventh, is the removing of generall accidents.

2. Efficient cauſe.

The duties of the Chirurgeon.

In the ſtaying of blood the Chirurgeon is to ſet two things before his eyes: The firſt is, how much blood he is to ſuffer to flow before he ſtay it, if the wounded perſon muſt leeſe any blood: The ſecond is, by what meanes the blood is to be ſtayed.

1. The ſtaying of the bloud.

As for the quantity of the blood which is to bee ſuffered to flow, you may ſuffer it to flow plentifully, if the party be of a ſanguine conſtitution, have a fleſhy habit of the body, if the veines bee large, and if the ſeaſon be hot, for this doth hinder inflamation to enſue. If you obſerve indications contrary to theſe, then it muſt flow but ſparingly, for it is the treaſure of life.

The meanes of ſtaying of the blood are in number eight.

The meanes of ſtaying bleeding.

1 The firſt is, the application of pledgets, or doſils of lint or tow moyſtned either in the whites of egges beaten, or in vineger and water, taking in tender bodies one part of vineger and three of water; but in hard bodies you may take one part of vineger, and two onely of water. This mixture is called *Poſca*: it muſt be applyed warme; for cold applications are hurtfull for wounds. Apply not dry lint or tow dry, to a wound bleeding in any way: for they cleave ſo firmly to the brimmes of the wounded parts, that they procure often a new flux of blood, when they are removed, ſeeing they muſt with ſome force bee removed: Unleſſe fomentation with ſome moyſtning and malaxing liquor be uſed, as with milke or butter, and beere warmed: which are not to be uſed in wounds in the fleſhy parts.

2 The ſecond is the deligation of the veſſell which ſendeth forth blood, whether it be veine or artery: This is to be uſed when great veſſels are wounded. *Ambroſe Parrey lib.* 11. *c.* 20. would have this meane to be uſed after the amputation of a member, whom you may reade: but in my judgement his practice is but a troubleſome and dangerous toy: as he ſhall find, who ſhall goe about to make triall of it. In the deligation of a veſſell two things are to be conſidered.

The firſt is, that if a nerve accompany the veſſell, which ſendeth forth blood, (as you may ſee in the ſoporall artery, which hath the recurrent nerve annexed to it) you are with your nailes to ſeparate the nerve from the veſſell: becauſe the part into the which the nerve is inſerted ſhall be deprived of moving, and feeling, and extraordinary paine will bee cauſed.

The ſecond thing to bee conſidered in the deligation of a veſſell is, that the binding be not too ſtrait, becauſe ſo the veſſell ſhall bee cut aſunder too ſoone, and ſo a new fluxion ſhall be procured.

The threed wherwith the veſſell is bound muſt be either of ſtrong ſilk or ſteele hemp, as they terme it, ſuch is the ſealing threed: For theſe are not ſo ſubject to putrifaction, and ſo there

there is leſſe feare of a new hemorrage, which would prove more dangerous than the firſt.

The third meane to ſtay bleeding, is the application of Sarcoticall, or incarnative medicaments. Such is that which *Galen* preſcribeth, 5. *Method.* 4. of aloe, frankincenſe, the haires of a Hare, and the white of an egge, all being brought to the conſiſtence of hony. In tender bodies take one part of frankincenſe, and two of aloe: In hard bodies one part of aloe, and two of frankincenſe. In thoſe who have a mean habit of body, uſe equal parts of both. *Olibanum in gutt is* better than frankincenſe. Apply this medicament upon pledgets or doſils of lint or tow. The maner of dreſſing is this. Couch the veſſell with the finger, then cleanſe the wound from the clotted blood, & all other moyſture, with a peece of a ſponge wet in red wine or any aſtringent decoction. Afterward beſprinkle the parts of the wound about your finger with the powder of aloe and frankincenſe. Then apply a pledget or a doſill armed with the aforenamed medicament, which preſently preſſe downe with your finger. Laſt of all, keeping downe the applications either with your finger, or with a probe, fill up the wound with pledgets or doſils armed. This being done, nothing remaineth, but to apply a double cloth moiſtned in ſome aſtringent liquor, and wrung, to the wounded part, and to roule it up; begin to roule below the wound, when you are come to the wound, compaſſe it with three or foure circumvolutions: Then aſcend and roule the part above the wound, to preſſe the bloud out of the veſſell, and ſo the flux of bloud will be ſtayed. You are not to open the wound afterward, but either upon the third or fourth day. Then all the pledgets or doſils, except the laſt, which immediatly cleaveth to the veſſell, are to be taken away, and new ones to be applyed, the wounded parts having beene beſprinkled with more of the powder. Thus you are to dreſſe the wound every other day untill the part be incarnate, and no feare be left of any more bleeding. 3

The fourth way to ſtay bleeding, is the injection of aſtrin- 4

gent medicaments; if we cannot come to reach to the veſſell with the finger, by reaſon of the depth of the wound, ſuch are bole Armeniack, *terra ſigillata*, marking ſtone, *hypocyſtis ſanguis draconis*, new gaules, the juyce of the Sloe, Plantane, Comfrey, Knotgraſſe, Milfole, Horſe-taile, and Leekes; of theſe you may frame ſuch compoſitions as this is: ℞ *ſuccicon-ſol. maior. polygon. equiſetion.* ℥ß, *ſucci fol. porri* ℥i. *bol. oriental.* ʒi, *ſanguin. dracon.* ʒß. *Miſc.* Such medicaments are powerfull, when the menſtruall courſes in women flow immoderately.

5 The fifth way to ſtay bleeding, is the tranſvers ſection and cutting aſunder of the great veſſell, which powreth out the bloud. Whenſoever a horrible effuſion of bloud followeth after a wound, you may gather that the veſſell is not cut aſunder tranſvers, unleſſe there be an enorme ſeparation of the parts wounded, not differing much from diſmembring: for if the veſſell be cut tranſvers wholly aſunder by a ſharpe weapon, that part of it which is next to the radication of it, ſhrinketh up towards it beginning, and is covered with the fleſh of the adjacent parts. If ſuch a caſe be preſented to you, follow *Galen* his counſell, who 5. *Method.* 5. adviſeth that you lift up the veſſel from the ſubjacent parts with a ſilver hooke, and ſo divide it being ſeparate; and that afterward you twiſt the upper part of the veſſell, which is eaſily done by laying hold of the part of the veſſell which is without the hooke. That kind of ſilver hooke which is uſed in Anatomicall diſſections, is fitteſt, for this wreathing of the mouth of the veſſell hindereth the effluxion of bloud.

6 The ſixth way to ſtay bleeding in a wound, is to cauſe an eſchare. Now this may bee done either by an actuall cautery, or by an eſcharoticall medicament: But wee ought not, but upon great neceſſitie, to have recourſe to uſtion. Firſt, becauſe it is horrible to the ſight and apprehenſion; for it doth in a manner exanimat cowardly perſons. Secondly, becauſe the benefit of it is uncertaine: for often times after that the cruſt or eſchare is fallen, a new hemorrage doth enſue. If you be driven to uſe the actuall cautery, then you are to obſerve

two

two things in the action: The firſt is, that you cleanſe the wound from clotted bloud, that the veſſell may plainly appeare, otherwiſe you having burned only the coagulat bloud, you ſhall thinke it burned to be a cruſt cauſed in the veſſell, which is not ſo; and ſo the next day it being diſſolved, will give way to a new fluxion. The ſecond is, that you apply the actuall no more than once, or twice at the moſt: for by the firſt impreſſion of the cautery the veſſell doth ſhrinke together; but by the ſecond it is wrinkled, if you apply the actuall cautery; the third it is turned unto a coale, which being diſſolved by the moiſture of the bloud in the veſſell will fall away, and ſo make way to a new fluxion of bloud. The medicaments which ſtay bleeding by cauſing of an eſchare, are theſe, *Vitriol*, *Allum*, *Ægyptiacum*, ſharpned with calcined *Vitriol*, the oyle of *Vitriol*, and the oyle of *Sulphur*, *Aqua fortis* and *aqua regis*, the trochiſces of *Minium* deſcribed by *Vigo*. But a medicament made of Umber, an earth which the Painters uſe, and *Calx viva* exceedeth all theſe, for it cauſeth little paine, and mightily cloſeth the mouthes of the veſſels.

A Hiſtorie.

About twentie yeares agoe returning from the Bathe in Somerſet-ſhire to the Howlt, five miles from Cheſter, where then I remained, having lodged in Newport in Shropſhire by the way, I was called by this Lord *Gerrards* Grand-father, to Gerards Bramley, to take a view of his Taylor, who had fractured both the ſocils of the legge, a little below the knee, about the bredth of a Palme. When I did behold the fracture with a wound, and the extenuation of the body, for the accident fell out ten weekes before, neither were the bones united; and beſides, there was a great tumor in the knee; I pronounced a lingering death to the party, unleſſe he were out of hand diſmembred above the knee. Being intreated by the ſicke partie, and the Earle, to performe the operation, I yeelded unto their requeſt; but having by me neither inſtrument, nor medicament, thus I ſupplyed the defect of both: I made a medicament of Umber and unſlaked Lime, taking equall parts of both, which I found there, the houſe then being

being in reparation; I uſed a Joyners whip-ſaw newly toothed: And in the preſence of two Chirurgeons, Mr. *Cole*, who dwelt in Lichfield, and Mr. *Heywood*, who dwelt in Newport, I diſmembred the Lords Taylor, unto whom the Lord gave ten pounds a yeare during his life time, who lived many yeares afterward. When I dreſſed the wound the fourth day, I found the mouths of all the veſſels ſhut by incarnation, ſo powerfull was the reſtrictive medicament, made of equall quantities of Umber and unſlaked Lime, rubbed to a fine powder, and reduced to the forme of a liniment by the addition of the whites of Egges beaten, and the haire of an Hare. *Fallopius* in his booke of wounds hath an ingenious device, which is this: He will have you to take a reed, which in bigneſſe is anſwerable to the capacitie of the wound. The one end being ſtopped with a corke, hee will have you to fill it with Germane or Hungarian Vitriol melted; when the Vitriol is cold, it is to be thruſt in one end an inch without the reed, and to be kept to the veſſell for the ſpace of an houre; in the which ſpace of time the mouth of the veſſell will bee ſhut firmly.

7 Seventhly, a flux of bloud is ſtayed by opening of a veine in the oppoſite ſide, although much bloud hath beene loſt; but the bloud muſt be drawne leaſurely; Beſides this, the extremities of the body muſt be bound with reaſonable ſtrait ligatures, where it ſhall ſeeme beſt to the skilfull Chirurgeon.

8 The eighth way to ſtay bloud, is to coole the whole body: for ſo the bloud is congealed, and ſo made unapt to flow: This is performed by two wayes: Firſt, in letting downe the wounded partie, laid in a ſheet, into a bath of extreme cold water, to procure a lipothomie or fainting, and by this the ſpirits returne from the extremities of the body to the center. Secondly, this is performed by Narcoticall medicaments: Receive this one as a patterne: ℞. *diaſcord.* ℥iij. *Philon. Perſici* ʒß. *ſyrup. papav. albi* ʒi. *aq. papav. errat. aut ſperm. ranar.* ʒiij. *Miſc. ut fiat Po. ſumenda frigida:* After the patient hath taken the potion, let him be kept quiet, and let him addreſſe him-

himselfe for sleepe. Although this dose of narcoticals may seeme too large, yet it may be given againe after that twelve houres are expired, if need shall require: These two last practices are excellent in immoderat hemorrages at the nose.

LECT. III.

Of removing from the wound extraneous bodies.

THe second dutie which a Chirurgeon is to performe to nature, to assist her, and to further her inclination, to procure the unition of the parts severed by a wound, is to provide that no externall or strange body be suffered to be in the wound, which may hinder unition. In this point two things are to be set downe: First, the differences of strange or extraneous bodies: Secondly, the meanes by the which they are removed. As concerning the differences of these bodies, they are extraneous, either by accident, or of their owne nature. Those which are extraneous by accident, are of three sorts: for they are either soft, as peeces of contused or separated flesh, and clots of bloud; or they are hard, as peeces of bones or cartilages; or they are of a meane substance, as peeces of membranes, tendons, chords and haire. Now those bodies which are extraneous of their owne nature, are either soft, as peeces of the wounded mans garments; or hard, and these are either metalline, as peeces of steele, weapons and bullets; or not metalline, as shivers of wood, gravell, and such like.

The kindes of extraneous bodies.

Having described as it were in a table, the divers sorts of extraneous bodies, to helpe the memory, which are able to hinder the parts disjoyned in a wound, as long as they continue in the wound; I am now to deliver unto you the wayes and meanes by the which they are to be removed, and taken out of the wounds.

First then, things extraneous accidentally, as clotted bloud,

How things accidentally extraneous, are to be extracted.

haires, durt or gravell, they may be washed away with claret or white wine warmed, *Aqui-vitæ*, vineger and water, oxymel dissolved in water: or if you be in the countrey, where these things cannot presently be had, you may use milke, or beare, or ale warmed: you are not to omit the cleansing of the wound with a Probe armed with lint: if splints of bones, or peeces of flesh, membranes, tendons, or ligaments sticke in the wound, you are to take them out either with your Forcips or Ravens bils. Having shewed you how things accidentally extraneous, which might hinder the unition of the wound, are to be removed: Now I must in like manner set downe how bodies of their owne nature extraneous, which sticke in wounds and hinder consolidation, as peeces of the weapon, bullets, and such like are to be taken out. In the extraction of these bodies, you are to set before your eyes these two things; to wit, the circumstances and the manner of extracting of them. As for the circumstances, these two are to be observed:

How bodies of their owne nature exrraneous, are to be taken out.

Circumstances to be observed before extraction.

First, that you attempt not the extraction of such bodies, as cannot but with great difficulty, paine and danger bee drawne out, and with the which remaining in the body the wound may be cured; such are bullets sticking deeply in the great joynts, as are the elbow and the knee.

The second is, that you goe not about the extraction of such bodies, if you see the wound to be mortall, and that the partie must die: the Prognosticks of such wounds I delivered unto you in my first Lecture of wounds, page 4. whither I remit you: for if you draw out the weapon wherewith a great vessell of the liver or heart is wounded, you shall hasten death: So the pulling out of *Felons* knife out of the bodie of the Duke of *Buckingham*, the *arteria venosa* having been wounded, procured speedy death. So much then of the circumstances to be observed before the drawing out of extraneous bodies.

The means by the which such bodies are taken out.

Now I will acquaint you with the meanes, by the which they are to be removed: The meanes are two: Medicaments

and

and inſtruments. Wee uſe medicaments; Firſt, when the extraction cannot eaſily be performed: as when we cannot lay hold upon the extraneous body by any fit inſtrument: Secondly, when there is no ſuſpition that the weapon was poyſoned, or that apoſtemation is not like to enſue. If therefore a thorne, or a needle ſo ſtick in a part that they cannot be taken out, without great paine, and large inciſion of the part, it is beſt to have recourſe to medicaments. I ſaw one who carried a thorne, which runne into his legge above the *tibia*, betweene the *perioſtium* and the skin, (when hee thruſt through a hedge in hunting) five yeeres. The medicaments which have a faculty of drawing out thoſe bodies, which of their owne nature are extraneous, are of two ſorts: for they are either ſimple or compounded.

Simple medicaments which draw out extraneous bodies by a hidden quality.

As for the ſimple medicaments, they are of three ſorts. For ſome effect this by an hidden or occult faculty: Of ſuch *Paulus Ægineta, lib. 4. cap.* 52. thus writeth: Peeces of weapons, arrowes, and thornes, which ſtick in the body, theſe things underwritten draw out. Both the Pimpernels, the root of *Ariſtolochia rotunda*, *ammoniacum*, the leaves of the henbane ſtamped and applyed in forme of a cataplaſme: The root of the reed beaten and mingled with hony: you may adde to theſe the horned Poppy leaves ſtamped, and uſed as the Henbane. Other medicaments doe extract ſuch bodies by an accidentall heat purchaſed by putrifaction, as bird-lime, ſtinking old pigeons dung, leaven and ſuch like.

The third ſort of ſuch medicaments are hot in the 2. or 3. degree, and of ſubtill and thin parts, as Onyons and Garlike roſted, pitch, roſin of the Pyne, *Aloe*, *epatyca*, *aſſa fœtida*, *elemni*, *propolis* or *bee-glew*, the greene leaves and roots of dittany, *Sagapenum*, *Galbanum*, *Euphorbium*: but in a ſmall quantity, and mingled with other matters.

Compound medicaments to this effect.

Of theſe ſimple medicaments ſundry compoſitions may be framed: but to omit ſuperfluities, I will onely deliver unto you three compound medicaments, whereof the firſt two are ſet down by famous *Fallopius* in his book of wounds: The

third is *Emplaſtrum ſacrum*. The firſt of *Fallopius* is this: ℞. *propolis, rad. recentis, dictamni, ſagapeni* an. ʒj ß. *fermenti, ſtercoris columbin. putris*, an. ʒj. *cepam coctam numero unam, picis liquid. & mellis* an. q. ſ. *ut omnia acquirant formam cataplaſmatis, quæ in mortario diligenter elaborentur.* The ſecond of *Fallopius* more ſtrong than this, receiveth theſe ingredients: ℞. *rad. recent. dictam. nri. pulv. dictamni Cretici, ſagapeni, aſſæ fetidæ, elemni* an. ʒj *viſci* ℥ ß. *reſin. pini* ʒj. *euphorb.* ∋ ß. *Sulphur. vivi* ∋ij. *picis liquid. & mell. crud.* an. q. *ut formetur cataplaſma.* The third compound medicament which I promiſed to deliver you, was *Emplaſtrum ſacrum*. The deſcription of it is this: ℞. *litharg. yr.* ℔ j. *ol.* ℔. ij. *colophon.* ℔. ß. *ceræ* ℥iiij. *Ammon.* ℥ij. *galbani* ʒj. ß. *ariſtol. rot.* ℥ij. *thuris* ℥i ß. *æruginis rad. dictamni Cret. aloes hepat. ſquamæ æris propol.* an. ʒvj. *rad. gentian.* ʒj. *fiat emplaſt. ſecundum artem:* This is an excellent emplaſter alſo againſt maligne ulcers, and dryeth alſo moyſt bones in ulcers, wherein the bones are carious. *Paracelſus* undoubtedly framed his ſticktick emplaſter after this deſcription. Neither is it inferiour to his in operation, with the which you may furniſh your ſelves ſufficiently: ſeeing it hath ſo manifold uſes: If you would have greater variety of ſuch medicaments, you may peruſe *Ætius, lib.* 15. *ca.* 14. and *Galen. de Compoſit. medicament. ſecund. loca*: But either theſe medicaments which I have ſet downe will ſerve, or elſe none.

Of Charmes.

Cornelius Schylander, a Phyſitian of *Antwerp*, in his practice of Chirurgery, publiſhed *anno Domini* 1577. *de vulnerib. lect. quinta*, hath theſe words: If by reaſon of the veines, arteries and nerves, the wound will not admit any dilatation, then wee are to uſe medicaments, which digeſt, relax, and draw; or charmes, which hee calleth *Verba conſtellata*, by the which he affirmeth, that all ſorts of weapons may eaſily bee drawen out with the fore finger and the thum. Hee profeſſeth that he ſaw this done: yet the charme he ſetteth not down. It may be that the party whom he ſaw practiſing this did not acquaint him with the charme.

The uſe of charmes is ancient.

Howſoever, the uſe of charmes is very ancient: For *Homer* in

in his *Iliat*, or Poeme of the deſtruction of *Troy*, ſheweth that *Podalirius* and *Machaon*, ſonnes to *Æſculapius*, who went to the ſiege of *Troy* with the Grecians, cured the wounded perſons not onely with ſalves, but μαλακοις επεσσιν, with ſoft words alſo. Now 2816. yeeres are expired ſince the deſtruction of the city of *Troy*. But ſeeing ſuch practices are accompted by the judicious infamous, I will leave them to Empyricks.

Having then ſet down how extraneous bodies, which ſtick in wounds, and hinder their unition, are drawne out by medicaments, it followeth I acquaint you with extraction of them by the helpe of inſtruments: In this operation I will ſet down theſe two points. The extraction of extraneous bodies by inſtruments.

The firſt ſhall be of the occaſions which may move you to goe about the drawing of theſe bodies out of a wound.

The ſecond ſhall be of the circumſtances remarkable in the drawing out of them.

The occaſions are three. Firſt, if the weapon may eaſily be drawne out. Secondly, if we feare apoſtemation, which may corrupt the wounded part. Thirdly, if wee feare the weapon to be poyſoned. The occaſions.

The circumſtances are twofold: for ſome are to bee noted before you go about the extraction of theſe bodies, and ſome are to be obſerved in the extraction it ſelfe. The circumſtances.

The circumſtances which are to bee noted before the extraction are in number foure. Before extraction.

The firſt is, that the Chirurgeon marke the forme of that body which is to be drawen out.

The ſecond, that he obſerve how deeply the weapon hath pierced.

The third is, that the Chirurgeon be a good Anatomiſt, and know the frame of the part: for ſo hee ſhall bee able to know which way weapons, or ſuch extraneous bodies are to be drawne out.

The fourth, the ſymptomes of the part wounded are to be conſidered, as well thoſe which are to enſue, as thoſe which

are preſent: as for example, if the wounded party find great paine, the extraneous body is without delay to bee drawne out. But if a fearfull flux of blood muſt enſue after the extraction, it is to be deferred.

Foure things to be obſerved in the extraction.

In the extraction of theſe extraneous bodies foure things are to be obſerved.

The firſt is, when it is moſt fit to remove theſe bodies.

The ſecond is, by what way they are to be taken out.

The third is, the figure of theſe things which are to be extracted.

The fourth is, by what inſtruments they are to bee drawne out. I will diſcourſe briefly of all theſe in order.

1 The time.

As for the time fit for extraction, if the paine bee intolerable, the weapon is preſently to be taken out, although wee muſt adde paine to paine, for this being done, all paine will ceaſe.

Secondly, we muſt not defer the extraction if the weapon be poiſoned, or cankered, although we muſt divide the muſcles, veſſels, and nerves: for wee are to have a greater care of the whole, that it miſcary not, than of the part. Neither need we to feare the application of the actuall cautery: for the fire doth conſume the poyſon, and taketh away all feare of a convulſion: How you may conjecture the weapon to be poyſoned, I will amply and plainly declare in the proper place. In five caſes you are to delay the extraction of the weapon.

When the extraction of a weapon is to be deferred.

Firſt, if there bee a feare of a great flux of blood, which may endanger the life of the wounded party: This doth fall out, if the wound bee inflicted where the great veines and arteries are placed by nature.

Secondly, if fearfull ſymptomes, as horrible paine, a convulſion, a ſharp fever, or a ſyncope, are like to enſue.

Thirdly, if the weapon be round, wee may more ſecurely leave it in a wound, than if it were flat: for the edges of it will cauſe paine of a neceſſity, whereas the other will not procure a paine ſo great.

Fourthly, if the orifice of the wonnd bee made narrow by an

an inflammation or a tumor, we are to defer the extraction of the weapon, untill thoſe accidents be removed, otherwayes we ſhall torment the patient, and procure ſownings, and a fever, and it may be a gangreen, or ſideration of the part.

Fifthly, let us not attempt the extraction of any weapon, or part thereof; unleſſe we have at hand a fit and convenient inſtrument: Otherwiſe wee ſhall vex the wounded party, without any fruit, and make him the more unwilling to ſuffer when we are better prepared for the action.

The ſecond thing to bee obſerved in the extraction of theſe bodies, is the way by the which they are to be drawn out. In three caſes the weapon may bee thruſt out the contrary way. 2 The way.

Firſt, if it be almoſt through, but chiefly towards the depending part: for ſo leſſe paine will be cauſed, and the quittour will more promptly flow from the wound.

Secondly, if the figure of the weapon will not ſuffer it to be drawne out the ſame way, by the which it was ſent in, as appeareth in barbed arrowes.

Thirdly, if there be no feare of cutting of great veſſels, or nerves. In other caſes we are to draw out the weapons the ſame way they went in.

But you may demand of me whether it bee ſafeſt to draw them out whole or by peece-meale. *Queſt.*

I anſwer, that all things brittle which ſticke in a wound, as glaſſe, and bones, are to be drawn out whole, if it may conveniently bee done: But if they cannot be pulled out whole, but with paine and feare of ſymptomes to enſue, they are to be broken, and then taken out. As for weapons, which cannot bee broken, and are like in their extraction to procure ſome miſchiefe, as barbed arrowes, you are to take them out with ſuch an inſtrument as is able to defend the wounded parts from harme: Of the which I will ſpeake by and by. *Anſw.*

The third thing which I wiſhed you to obſerve in the extraction of ſtrange bodies was their figure: for the obſerva- 3 The figure of the weapon.

tion

tion of this point is requisit: For the figure oftentimes doth make the extraction more easie or difficult, as hath beene exemplified in a round and flat weapon.

4 The diversities of instruments.

Now the fourth thing observable in extraction of extraneous bodies was by mee said to bee the diversity of instruments. Of them I could make sundry *Lectures*; but I meane not so to mis-spend good houres: Necessity and Observation invented them at the beginning, when man being enraged by the instigation of the Devill, and the perturbations of his owne mind, not contented with his owne members which nature had granted him for offence and defence, found out a meane compendiously, to send his brother (the image of God) to dwell with *Pluto* for all eternity, and to bee estranged from his Creator. O that we could pack up injuries for the present untill the day of judgement, the great assises come: Then we should see a number of injuried persons, sufficiently avenged of their oppressors, whom wee shall see adjudged to eternall torments, because they bid patience farewell, and would by entertaining revenge become Judges of their owne causes, and deny to God the tryall and revenge. Many instruments used in our fore-fathers time, are become now out of use. Man in every age doth devise new instruments of death. A compend wee have in our age, *Gun-shot*, the imitation of God his thunder; but the example is more fierce, and sendeth more soules to the Devill, than the paterne. Of Instruments I will but onely point at a few as necessary, referring the rest to the industry of judicious Chirurgeons, which shall be employed in Military affaires.

1 First, you must have a *Blunt hooke* to lift up a veine, artery, or nerve, when a bullet or arrow head is to be taken out of a musculous part.

2 Secondly, you must have a paire or two of forcips hollow, strong, and of good steele, to lay hold on barbed arrowes, or such weapons as may hurt the parts as they are drawne out.

3 Thirdly, Goose bills round and hollow at the points, double

double and ſingle to take out bullets of ſteele in like manner.

Fourthly, The Ravens bill ſtrong to ſquiſe and take out arrow heads, bones, and ſuch like. 4

Fifthly, the *forcipes inciſorii*, which cut being dilated on each ſide: Theſe muſt be of good ſteele, well tempered, and very ſharp. Thoſe which are ſold in the ſhops are worth nothing. Theſe may have uſe when a wound is to be inciſed to draw out of it any extraneous thing. 5

LECT. IV.

Of the preſervation of the temperature of the part, by the right ordering of things not naturall.

IN the former Lecture I diſcourſed of the ſecond and third duty, which the Phyſitian or Chirurgeon (called to cure a wound) was to performe to nature, and thoſe were his care that no extraneous body ſhould bee ſuffered to ſtay in the wound to hinder the unition of the parts: and if it by fortune were there found, it ſhould by his skill be removed.

In this Lecture, I am with the like brevity and perſpicuity to deliver unto you the third and fourth duty, which doth belong to a Chirurgeon or Phyſitian, natures friends, in aſſiſting her in preſerving her ſelfe, and labouring to ſhun the wrongs offered by her adverſary, which hath done the beſt to procure her overthrow and diſſolution, by diſjoyning her parts united. Theſe duties are two; to wit, that the Phyſician and Chirurgeon firſt labour to preſerve the naturall temperature of the part wounded: And ſecondly, that he labour to reſtore it if it be loſt. The 3 and 4 duties of a Chirurgeon.

The naturall temperature of the body, is preſerved by two meanes. The firſt is, the right ordering of theſe things which are called not naturall: The ſecond is the application The meanes by which the temperature of the body is preſerved.

of convenient medicaments. But before I goe about to deliver unto you the meanes either to preserve the naturall constitution of the part wounded not being altered, or how it is to be restored when it is lost; I must describe unto you the naturall constitution, that knowing it aright, you may bee able, using it as a rule to see, as it were in a glasse, the defects which have seized upon nature, and the degree of their declination from that which is *secundum naturam*, or according to nature.

What the naturall temperature of the part is.

Now the naturall temperature of the part is, *Naturalis ejus siccitas*, or the convenient siccitie or drinesse of it. So much we may collect out of *Hippocrates*, who in that Treatise which he hath left to us, *de Ulceribus*, or of Ulcers, affirmeth that *siccum est sano proximum*, that is, that, that which is drie commeth neere to that which is whole. In your practice by observation, you have learned to prognosticate to your selves health to every patient having either ulcer or wound, when you see small store of laudable quittour to flow from the sore.

Doubt.

But you may doubt, and not without cause, why *Hippocrates* did ascribe the naturall temperature of the bodie to drinesse, a passive qualitie, and not to heat or coldnesse, which are active qualities.

Sol.

I answer, that this cause moved him to thinke so; because if the naturall siccitie or drinesse of the part doth continue unviolate, the naturall degrees of heat and coldnesse are preserved in the body; But by the contrary you have observed, that if in the part wounded, by reason of paine, superfluous humiditie bee attracted, and extraneous heat bee increased, that the naturall heat oftentimes is corrupted, and corruption of the part ensueth, or else that it being more than the naturall heat can rule and dissipate, doth cause a schirrus of the part either wounded or ulcerated: and so you see that if the naturall drinesse of the part wounded be maintained, that neither the naturall heat is corrupted, nor the naturall coldnesse increased.

When

When I speake of naturall coldnesse, I would not have you to thinke that I speake of an absolute coldnesse, which quite extinguisheth the naturall heat, and causeth the sideration or death of the part: but of a comparative coldnesse found in some parts, which is so great in them, that if it be compared with the heat of other parts, it may seeme a privation of heat, although not perfect. Such are the spermaticke parts, if they be compared with the fleshie, and amongst those the bones, if they be compared with the muscles, your senses will teach you so much. Having spoken so much of that which is meant by the termes of a naturall temperature of a part wounded, as is needfull for a Chirurgeon to know: I must labour to performe that which I promised in the beginning of the Lecture, and that was the setting downe of the meanes by the which it is preserved. I affirmed them to be two; to wit, the right ordering of things not naturall, and the convenient use of locall medicaments. Which parts are cold and hot.

As concerning the first point, receive these documents. Seeing then a speciall care is to be had of the Aire, the Diet, of evacuation, of rest, and exercise, of watching and sleeping, and last of all, of the passions or perturbations of the minde, which he that is dangerously wounded is to observe, if he be presented to you to be cured; I will briefly set downe how every one of these is to be ordered.

As concerning the Aire: That aire which is temperate, and so proportionate to the temperature of the parts of the body, is most fit for wounded parts: Nevertheless some require both a hotter constitution of the aire, and warmer applications than others doe. Will you know which these parts be? *Hippocrates* shall resolve you, *Aphor. lib. 5. Aphor. 18.* besides whom these words are found: Cold is an enemie to the bones, teeth, sinewes, braine, the spinall marrow; but heat is pleasing to these. Heat principally delighteth the joynts, because naturally they are cold, being framed only of spermaticke parts, as tendons, membranes, ligaments, cartilages, and bones, and that as well in the Summer, as in the Of the Aire.

Winter. A temperate aire is most convenient for other parts.

Why the ventricles may best endure cold.

If any parts may endure cold, these are the ventricles, according to *Hippoer. lib. de Vlceribus:* for the confirmation of this his opinion, two reasons may be yeelded:

1 For first, the externall cold doth increase the naturall heat, by keeping it in by sealing up the pores, by the which it might breathe out, and so it doth cause the better concoction, and maketh them more able to expell all excrements; but immoderat heat doth eliquat or melt the humours, induceth an unnaturall heat, which doth dissipate the naturall heat, and so maketh the ventricles unapt to execute their functions.

2 Secondly, in the ventricles there are great vessels which containe plentie of bloud and spirits, which are able to resist any cold impression. In the breast you have the *vena cava* ascending, the *vena arterialis*, the *arteria venalis*, and the *aorta*. In the lower ventricle you have the mesaraicall veines, the *vena porta*, the radication of the *vena cava*, and the *aorta* descending. What I have spoken of the Aire, I would have to bee understood of the Chirurgeons hand, the medicaments, and linnings which are to be used about the dressing of the wounded partie. If the season of the yeare afford not unto you an aire answerable to your desire, you are to procure it by art.

What diet is convenient.

Now it followeth, that I appoint a convenient diet for persons wounded: As concerning the diet, receive these Aphorismes. First, in great and fresh wounds, and in such as threaten an inflammation, which happeneth most usually if the body be plethorick, a slender diet is to be prescribed. Secondly, in wounds of the ventricles and joynts, and in those which have beene stitched, the like diet is to be used. Two questions here may be moved.

Quest. 1. The first is, what *victus tenuis*, or a slender diet is.

Quest. 2. The second is, how long this diet is to be continued.

Sol. 1. A slender diet is that which affordeth but little nourishment, and cooleth; for such a diet is most fit for the contemperating of the heat of the humors, and the staying of the influx of the same.

This

This diet is to be continued untill the ſeventh day be paſt, which is the firſt criticall day in ſharpe diſeaſes. Then the uſe of wine, fleſh and egges are to be forbidden: let the wounded partie take thin broths altered with Lettice, Spinage, Purſlaine, Endive, Succory, the common and wood Sorrell, adding the emulſion of the ſeeds of the Muske-melon, Pompion, and Cucumber. Thin Panadoes, and Oatmeale gruels are fit. Sallets of the aforenamed herbs, boyled and dreſſed with vineger and ſweet butter, may bee permitted: Apples and Peares, either roſted or baked, cold may be granted. Let the drinke be ſmall beare or ale to thoſe who have uſed them in their health: But if you have in cure one, who cannot abide this liquor; then you are to appoint for him water boiled with the bottome of a wheat-loafe mingled with *Oxyſaccharum*, or the ſyrup of Endive, Succory ſimple, or Violets, taking iij ℥ of water, and one of the ſyrup. Receive the deſcription of a parable julep, which will ſerve all perſons; ℞. *aq. font.* ℔. iij. *vini albi* ℔. j. *avenæ mundat.* ℥iiij. *Bulliant iſta ad conſumpt.* ℔. j. *at coletur decoctum, cui admiſce aq. roſ. cochl.* iij. *ſacchar. op.* ℥iiij. *ut paretur julapium clarum.* In wounds wherein there is no feare of ill accidents, you may grant poched egges, ſo that the wounded partie eat as well the white as the yolke. Having ſhewed unto you what aire and diet are moſt convenient for wounded perſons, I am in like manner to talke of Evacuation: Of it there are two kinds, Phlebotomie and purgation by ſiege. As for Phlebotomie, the end of it, is to procure liccitie, or drineſſe to the wounded part, according to *Celſus*, *lib. 6. cap. 16.* whether phlebotomie be to be uſed or no, theſe things following will ſhew you: The wound it ſelfe, the habit of the whole body, the paſſions of the minde, and the aire it ſelfe, from the wound it ſelfe. Of this operation receive theſe canons:

Sol. 2.

Evacuation.
Phlebotomie.

Firſt, in great wounds, from whence ſmall ſtore of bloud hath iſſued, and when weake parts are wounded, as the joynts, whither ſuperfluous humours may be turned, phlebotomie is neceſſary. The reaſon of the firſt part of the canon is this:

Indications from the wound it ſelfe.

If the wound hath bled but little, the part not being ſufficiently dried, fluxion and inflammation may be cauſed.

Secondly, if in a wound either deepe, or many ſtitches have beene taken, a veine is to bee opened: for the paine which is cauſed by reaſon of the ſtitching, is like to procure attraction of humours, and an inflammation.

Thirdly, in wounds, wherein there is no great paine, and in the which neither deepe nor many ſtitches have beene taken, you may ſpare phlebotomie.

Fourthly, in wounds of the fleſhie parts which are ſtrong, as alſo in thoſe parts unto the which a humour can hardly be carried, as in the hairy ſcalpe and face, you may abſtaine from bloud letting.

From the habit of the body.

As for the habit of the body, take this Aphoriſme: If the body be plethoricke and feveriſh, if choler abound, boldly open a veine; but not ſo, if the partie be melancholike, for this humour can neither be ſo eaſily inflamed, nor flow to cauſe any inflammation: You are in like manner to note the paſſions of the minde. If the partie wounded be furious and haſtie, if hee ſleepe not well, if the ſpirits bee extraordinarily moved, open a veine; but if the wounded party bee of a dejected ſpirit and fearfull, and bee but little moved, you may ſpare bloud letting.

From the paſſions of the minde.

From the ſeaſon of the yeare.

Laſt of all, you are to obſerve the conſtitution of the aire: In hot weather then you may more boldly uſe phlebotomie than in the cold; and ſo rather in the Summer ſeaſon, than in the Winter, for in hot weather the humours are hotter and thinner than in the cold, and ſo more apt to flow to the wounded part.

Of purgation by ſtoole.

As for purgation by ſtoole, it is appointed for ſtaying of humours from flowing to the part wounded. But ſeeing the ſymptomes which ariſe by reaſon of a fluxion, are moſt commonly two, a Phlegmone or *Eryſipelas*, it is evident that thoſe purgative medicaments which evacuate choler called *cholagoga*, are moſt fit: ſuch are *manna*, *tamarindes*, *caſſia*, the ſyrup of Roſes and Violets ſolutive, *Electuarium leni-*

lenitivum, elect. de ſucco roſarum, diacatholicum, diaprunum, &c.
In five caſes ſuch medicaments are to be miniſtred: Firſt, in wounds of the ventricles. Secondly, in wounds of the joynts. Thirdly, if the part wounded be troubled with an inflammation or *Eryſipelas*. Fourthly, if the wounded part hath beene ſtitched. Fifthly, if either incision, dilatation or raſping of the bone have beene uſed. As for reſt and motion, receive theſe admonitions: Firſt, As in wounds of the lower limbs, it is ill to walke or to ſtand: ſo in wounds of the upper limbs, it is hurtfull to exerciſe them. Secondly, if either the ſuperiour or lower parts receive a great wound, it is good to keepe the party in bed: but let the wounded part be placed in that poſture, as is like to afford greateſt eaſe. As for example: If the hand or foot be wounded, let them bee placed ſomewhat high, to hinder flowing of humours to them. If the member muſt be kept immoveable, the uſe of it will ſhew the beſt ſituation: for ſome parts muſt be kept bended, as the elbow and fingers; but others muſt be extended, as the knee and foot: and from hence ſprang this obſervation, *cubitus ad collum, crus ad lectum*, the elbow is to be tyed to the necke, but the foot to the bed. As for watching and ſleeping, ſeeing watching doth drie the body, as ſleepe doth moiſten it, according to *Hippoc. Aphor.* it is not good for the wounded partie to take immoderate ſleepe, in two caſes: Firſt, if we feare that humours will flow to the part wounded, which we may conjecture that it may doe in plethoricke bodies. Secondly, if a wound fall out to be in a joynt, for ſleepe doth coole the joynts; but if the paine bee great, then it is good to ſuffer the wounded perſon to ſleep; yea, to procure it by anodine meanes, inwardly miniſtred, and outwardly applied, if you ſee Nature of her ſelfe not inclined to ſleepe; for ſo the ſpirits being retired into the center, the faculties is at reſt, and ſo the paine is eaſed. Laſt of all, I will conclude at this time by ſpeaking but ſparingly of the paſſions of the minde: wee muſt labour to remove all perturbations of the minde from thoſe who are wounded.

Of reſt and motion.

The poſture of the patient.

Watching and ſleeping.

The paſſions of the minde.

wounded. Wherefore no ill tydings are to be brought to thoſe, who are come to the yeeres of diſcretion, and children by all meanes are to bee kept from crying and weeping.

Venus is to bee abandoned.

Above all other things let *Venus* bee abandoned: for it exceedingly hindereth conſolidation: for by it the blood and ſpirits are inflamed, and by the motion noxious humours flow to the part: There are few amongſt you (I make no doubt) who have not by experience in Patients obſerved the incommodities of this action.

LECT. V.

Of the fifth and ſixth duties belonging to a Chirurgeon in curing of a wound.

IN the former Lecture, I did ſhew you as briefly and plainly as I could, how the naturall temperature of the wounded part is to be preſerved by the right ordering of thoſe things which are called *non naturales*, or not naturall. Now I am to ſhew you how this ſame is to be effected by the application of locall medicaments: for in *Plethoricke* or *Cacochymicall* bodies, all meanes being uſed according to art, will ſome times but with difficulty prevaile.

What medicaments are fit for wounds.

Seeing as I did ſhew you that the naturall temperature of the part is nothing elſe but the naturall *ſiccitie* or dryneſſe of it: it is out of all controverſie, that the medicaments which are to be applyed to the wounded parts, ought to bee *ſiccantis* or drying.

Queſt.

But ſeeing there are ſundry degrees of drying medicament, you may demand of me in what degree of dryneſſe thoſe medicaments ought to be, which are to be applyed to wounded parts?

Anſw.

I anſwer, that both the temperature of the whole body, and of the part affected will declare this unto you. One thing is to be noted, that the medicament which is to bee applyed

plyed to a wounded part ought ever to bee ſome what dryer than the part it ſelfe.

As for example, if the cheeke of a Boy or Girle bee wounded, you are to apply medicaments which are dry in the firſt degree, as S. Johns woort, avens, camomill, melilot, ſaffron, barley and beane meale: But if a boy be wounded in a joynt, or nerve, you are to apply ſuch things as are dry in the ſecond degree. If theſe things happen to an aged perſon, or a ſtrong clown; then you are to apply ſuch Topicks as are dry in the third degree. Wherefore in ſoft parts wounded as in the bellies of muſcles, and fleſhy parts, a medicament is to bee applyed, which is of the ſtrongeſt in the firſt degree. In parts which are hard, as in the tendons, or cartilages wounded, you are to apply to the parts wounded ſuch medicaments as are ſtrongeſt drying in the third degree. But to parts wounded, which are of a meane temperature, neither too ſoft nor too hard, you are to apply for medicaments the ſtrongeſt deſiccatives in the ſecond degree.

What things are unfit for wounds.

Of this which hath beene ſpoken, you may gather, that neither ſpring water, nor oyle are fit to bee applyed to wounds: becauſe both doe moyſten and relax too much. Beſides this, if cold ſpring water be applyed, it may procure a gangren by too much refrigerating the part, and quenching the naturall heat. Let me warne you of one thing, that theſe deſiccative medicaments muſt have a moderat aſtriction: for ſo the blood being ingroſſed, more ſhall not flow to the part than is requiſit for the nutrition of it. Seeing I have made mention of ſuch ſimples as are fit to be applyed to wounds, to procure their unition, you will expect (no doubt) a briefe enumeration of ſuch as are accounted the moſt effectuall. I will onely name them, leaving their deſcription, and other effects to bee gathered out of the monuments of ſuch as have publiſhed Herbals, and have diſcourſed of Animals, or living creatures and Minerals, from whence theſe meanes are fetched.

Which authors are to be conſulted concerning the nature of Vegetables, Animals, and Minerals.

If you are deſirous to know the nature of Plants, have re-

courſe amongſt the Ancients to *Dioſcorides*, who was a ſtipendiary Souldier under *Cleopatra* Queene of *Ægypt*, who was overcome by *Auguſtus Cæſar* in fight by ſea at *Actium the Promontory*, about 42. yeeres before the birth of Chriſt. As concerning Minerals, *Fallopius* hath left a Treatiſe of them, who hath delivered ſo much of them as is requiſit for a Chirurgeon to know: If you have a mind to know what varietie of Living Creatures there be, peruſe the Monuments of *Conradus Geſnerus*, *Ulyſſes Aldrovandus*, and *Rondeletius*, who have written of theſe ſubjects. The Simples then which are moſt effectuall for the conſolidation of wounds, are deduced either from Vegetables, or Animals, or Minerals. As for thoſe which are taken from Vegetables, I commend unto you theſe; S. Johns woort, S. Peters woort, betonie, agrimonie, birth woort, vervine, both the ſorts of avens, the pomgranat flowers, horſe-tayle, plantaine, knot-graſſe, mil-foile, lunaria the greater and leſſer, the ſheepheards purſe, perwincle, the larkes heale, both the centories, but the greater is more effectuall, dittanie, comfrey, our ladies mantle, ſelfeheale, the clownes ale heale, *ſerpentaria*, the adders tongue, the lily, partſtrife, horehound, the myrtill, the red roſe, myrrhe, maſtick, *elemni*, *olibanum*, frankincenſe, Salomons ſeale, turpentine, pitch, roſin, the willow, rew, farcocol, borax, our ladies torch, bird-lime, the wild-baſtard ſaffron, and *carduus benedictus*, tabacco. Of theſe ſimples taking the juyces and the herbes ſtamped, you may make balſams; and if you adde ſwines greaſe, wax, roſin and *gummi elemni*, you may make Unguents effectuall for the curation of wounds.

Vegetables for wounds.

Medicaments from animals.

Living Creatures put to their helping hands: of them you have *Mummia*, earth wormes, ſnailes, the fat of a horſe, ſheeps ſewet, ſwines greaſe, deere ſewet, goates greaſe, the extract of mans blood, the ſpyders web, bones burned to white aſhes, and harts hornes calcined, if they be brought to an impalpable powder, being crowned upon a painters ſtone, and made up into the forme of trochiſces, with the diſtilled water of ſnailes, and then being beat to powder, and mingled with *unguentum*

guntum Baſilicum, or *aureum*, exceedingly further the curing the wounds of the joynts, nerves, and tendons.

The Minerals alſo are no niggards in this caſe. The Litharges preſent themſelves firſt, without the which, hardly can any emplaſter be brought to a laudable conſiſtence. That which is called litharge of Gold doth afford a brighter colour to emplaſters than that of ſilver: yet the effect is all one. Copper doth afford *æs uſtum*, *ſquama æris*, and *æs viride*, all very uſefull in the practice of Chirurgery. *Jupiter* or Tinne, yeeldeth his flores by ſublimation, or if he be diſſolved in a convenient liquor, cryſtals: which being dulcified and brought to powder, and mingled in a due proportion with convenient unguents or emplaſters, further exceedingly the healing of wounds and ulcers. *Mars* or Iron affordeth unto us his *crocus*, as 'tis termed: How powerfull it is not onely to haſten conſolidation of ſolution of unity; but in laskes, *gonorrhea*, and other diſeaſes alſo, there is none ignorant, who hath had but a reaſonable practice in Phyſicke or Chirurgery. What ſhall I ſpeake of *Minium*, both the Corals, *Tutia*, *Calaminaris*, and the Loadſtone. By the enumeration of theſe few meanes taken from vegetables, animals and minerals, for the curing of wounds, you may perceive how bountifull Nature is to Mankind in ſupplying his wants. O that hee were not wanting or deficient to himſelfe. If wee would take paines onely to prepare thoſe things, whereof Nature hath left us no ſmall ſtore, and judiciouſly according to the preſcript of art apply them, we ſhould find in our practice a better ſucceſſe than ſundry times falleth out: Neither ſhould wee have need to blame the irregularity of patients, and the ill correſpondence of thoſe things, which are called *non naturales*, or not naturall. Whoſoever thinketh that he may without any ſtop or ſtay, goe through the curing of all wounded perſons, in what part ſoever the wound is inflicted, with the ordinary unguents, caried about in ſalvatories, hee deceiveth himſelfe.

Medicaments from Minerals.

Theſe for the preſent uſe muſt bee in readineſſe; but if hee

find theſe after application not to anſwer his expectation, he muſt have recourſe to others. Which medicaments are fitteſt, the collation of the part wounded, and the Topicks will ſhew, as I have told you before.

How the naturall temperature being altered, is to bee corrected.

Having delivered unto you how the temperature of the part is to bee preſerved by the right ordering of theſe things, which are called *non naturales*, or not naturall, as aire, meat and drink, evacuation and retention, ſleeping and watching, &c. as alſo by the application of fit topicks to the part, you may require according to my promiſe, how the naturall temperature if it be altered, may be reduced to its own tenor againe. Let me tell you that by the ſame meanes it is to bee reduced by the which it is preſerved. Onely this is to be obſerved, that the meanes which cure muſt bee more forcible and more intended in their qualities, than theſe are which are applyed to maintaine the naturall temperature.

As for exemple, if a wound prove very moyſt, and ſend out much quittour, you muſt labour ſtrongly to dry the habit of the body, by bleeding, purging, a ſlender dyet, watching, and ſuch like, and by applying to the wounded part medicaments, which ſtrongly dry; and are endued with a certaine aſtriction. If other elementary qualities, as heat, cold, drineſſe appeare, they are to bee removed by their contraries, but intended in their qualities above that degree, which was ſufficient to maintaine the naturall temperature of the part wounded.

Now the ſixt duty which I affirmed to bee required of the Phyſitian or Chirurgeon, when he is called to cure a wounded perſon, was the obſervation of the excrements which flow from the wound, and their true and naturall cauſes: I will deliver firſt unto you the diverſity of excrements or quittour, which a wounded part ſendeth out, and then I will ſhew unto you the cauſes of them.

Of the diverſities of excrements which flow from a wound.

The excrements which flow out of a wound, are in number three; *Ichor*, *Sordes*, *Pus*: *Ichor* is a thin excrement: The cauſe of it is inconcoction. Of it there are two kinds:

for

for either it is an excrement iſſuing from the veines themſelves, or elſe it proceedeth from the wounded part: If it iſſue from the veines, then it is a wateriſh and thinne humidity, flowing from the capillar veines, not altered, and without any noyſome ſmell, by its colour ſhewing which of the foure humours hath dominion in the maſſe of blood. Wherefore if the blood bee very pure, it hath a certaine bright redneſſe repreſenting water, wherein fleſh hath beene waſhed. If yellow choler bee predominant, then this *Ichor* is of a cleare yellowiſh colour: If fleame abound, then the *Ichor* is whitiſh: If melancholy ſurpaſſe, then the *Ichor* or thin humidity is of darkiſh ſwart colour. If this thinne humidity ſpring from the part wounded, becauſe it is altered and corrupted by the part which ſendeth it out, it hath an unpleaſant ſmell, being an excrement of the part. As the firſt kind of *Ichor* is called *ſerum ſanguinis*, the wateriſhneſſe of the blood, which is mingled with the blood contained in the *vena cava*, that ſo being made more fluxible, it may the more eaſily bee diſtributed by the branches of *cava*, to the habit of the body to nouriſh it; ſo the *Ichor* which is an excrement of the wounded part, is called *ſanies* and *virus*: and according to the degree of the corruption of the part, it is more or leſſe ſtinking. If it flow from a part poſſeſſed with a cancer, it is wonderfull maligne and ſtinking: If it iſſue out of a part fiderat or mortified by reaſon of a *ſphacelus*, it is cadaverous. By the exhalation which is breathed out of the pores of the skin raiſed from the *ſerum ſanguinis*, by the naturall heat dogs find out their maſters, and will conſtantly hunt after that game, about the which they are firſt ſet about. This bewrayeth the complexion of the *Individuum*; but *ſanies* and *virus* ſheweth the corruption of the part.

Ichor from the veines.

Ichor from the part wounded.

The ſecond kind of excrement is called *Sordes*: This is a compact and viſcous excrement ſo cleaving to the wounded parts, that it will not bee removed without the uſe of a firme inſtrument: for lint upon a probe will not bring it away.

Sordes.

The cauſes of the thickneſſe of *ſordes*.

Of this thickneſſe three cauſes may be aſſigned: the firſt is the dry conſtitution, both of the whole body, and the wounded part alſo: the ſecond cauſe may be the errour of the Chirurgeon, who hath applyed too drying medicaments to the affected part: the third cauſe may be the cold aire, which having beene let in to the wound, by the careleſneſſe of the dreſſer of it, hath condenſed, and thickned the *Pus*.

Pus.

The third excrement which wounded parts ſend forth is called *Pus*. This is an excrement white, ſmooth and equall or uniforme, without any grumous or knoty ſubſtance, having no ill ſmell, not ſo liquid as *ſanies*, nor ſo thick and viſcous as *ſordes*: See *Hippocrates lib. de Prædictionibus. Galen. 2. ad Glaucon. 8. & 5. Method. 10.*

The cauſes of excrements in wounds.

Now to come to the cauſes of the excrements which are ſent forth from wounds, which was the ſecond poynt propounded concerning theſe excrements, note theſe aphoriſmes. Firſt, the cauſes of theſe excrements are either the efficient or materiall cauſes. Secondly, the efficient cauſes are two, the naturall and unnaturall heat. Thirdly, the naturall heat is the cauſe of concoction, whereby a laudable *pus* is engendred: But the unnaturall heat working upon humidity cauſeth putrifaction and an evill ſmell. Fourthly, The materiall cauſes are two, to wit, contuſed fleſh which by digeſtives muſt bee turned to quittour and a humour, which moſt commonly ſymbolizeth with the complexion of the party wounded, whether it bee naturall or accidentall. If then the naturall conſtitution of the party wounded be good, the *pus* is laudable: But if by reaſon of errors committed in the uſe of thoſe things which are called not naturall, in the courſe of life a ſikely complexion bee acquired: As for example, if one be become hydropick, pockie, or leprous, then the wound is like to caſt out no good excrement; but either *ſanies*, *virus*, or *ſordes*.

LECT. VI.
Of the common ſymptomes of Wounds.

AT the laſt, I come to the laſt generall dutie, which the Chirurgeon is to diſcharge to Nature in aſſiſting her, in joyning disjoyned parts procured by a wound, and that is the ſeventh duty in number, as I ſet downe in my ſecond Lecture concerning this ſubject of wounds. This I affirmed to be the removing of ſome generall accidents which enſue, and oftentimes invade the wounded partie, after that a wound is inflicted: Now theſe are in number two; Paine, and Swooning, or fainting; I call them generall, becauſe they may accompany all ſorts of wounds, as well ſimple as compound: As for paine, no wound can bee inflicted without cauſing ſome paine, either more or leſſe: This is certaine in all compound wounds, and agreed upon by the unanimous conſent of all Authors, who have left Treatiſes of this ſubject to poſteritie: Beſides this, ſeeing the skin, at the leaſt, muſt bee divided in ſimple wounds; who can imagine that this can be done without paine, ſeeing the skin is the inſtrument of touching and feeling? As for fainting and ſwooning, it alſo often falleth out both in ſimple and compound wounds: And in ſimple wounds daily obſervation doth evince this to bee moſt true. I know that none of you who hath beene imployed about bloud-letting, hath beene ſo carefull and fortunate in performing the operation, but that hee hath had ſundrie who have fainted under his hands, before any remarkable ſtore of bloud hath beene drawne. Now what wound can be accounted more ſimple, than that which is made with the lancet or fleaume, which will be united within the ſpace of few houres after that the veine is ſhut and bound up. It fell out once that I ſate at the table with ſundry Gentlemen, amongſt whom there was one noted for his valour; hee having

The two generall accidents of wounds, Paine, and Fainting.

ving but lightly cut his finger, and by the advice of one, who ſate next unto him, applyed a little ſalt to the part inciſed, with his knife, preſently ſunke downe from the table, and was carried away; I ſpare his name, becauſe he yet liveth, and might juſtly be offended if this relation ſhould come to his eares.

Of theſe two accidents, I will firſt diſcourſe of Paine, becauſe it extendeth it ſelfe farther than Fainting or Swooning doth; for no wound, whether it bee ſimple or compound, can be without more or leſſe paine, when it is firſt inflicted, for the reaſon which I yeelded a little before. Whereas ſundry have received grievous wounds, and yet have not fainted; for it muſt be not a ſmall matter, which will cauſe a ſtout or magnanimous perſon to faint: Beſides, this paine very often is the cauſe of fainting; now the cauſe by nature hath the priority of the effect. Paine then in Latine is called *dolor*, which is deduced from the verbe *doleo*, which ſignifieth to grieve or to feele paine. Firſt, I will deſcribe unto you what paine is; ſecondly, how this accident is removed from the wounded parts, by the application of convenient locall application, which moſt properly is the office of the Chirurgeon.

The firſt deſcription of Paine.

Paine is deſcribed by *Galen* to be *triſtis ſenſatio*, a grieving feeling; this deſcription of *Galen*, rather ſheweth how paine is cauſed, than what it is; for paine is procured by ſome offending object, moving the inſtrument of touching: And in truth wee muſt acknowledge that paine is not the feeling it ſelfe ſimply; wherefore *Galen* did not call paine feeling abſolutely, but feeling with a griefe. In paine two things are to be noted: Firſt, the apprehenſion of the ſenſible object, as it is ſenſible: The ſecond is the apprehenſion of the ſame, as it is pleaſing or unpleaſant. If we further inquire in which of theſe two the nature of paine doth ſubſiſt: wee muſt confeſſe that dolour or paine is not the very apprehenſion of the ſenſible object, but the griefe which is cauſed by the apprehenſion of the unpleaſant ſenſible object, and the corruption

Two things to be noted in Paine.

of

of the organ. Wherefore, paine may thus fitly be deſcribed; It is a grievouſneſſe, which is felt in the inſtrument of the ſenſe of touching, cauſed by thoſe things which make a ſolution of unitie.

2. Deſcription of paine.

In this deſcription, three arguments of Logick are to bee marked. The firſt the *genus*, which is ſaid to bee *moleſtia*, or grievouſneſſe: for there are griefes as well of the minde as of the body; as envie at the proſperity of another, which is diabolicall; and raſh anger, which is beſtiall: but paine is a griefe of the body. The ſecond argument is the ſubject wherein paine is ſeated, and that is the organ of touch. The cauſes make up the third argument; and thoſe are thought to be ſuch things as cauſe ſolution of unitie in the inſtrument.

Two kindes of griefes.

Queſt. Here a queſtion may be moved, whether a paine may not be felt in the inſtruments of other ſenſes, as the hearing, ſeeing, &c. as in the inſtrument of touching?

Anſw. To this I anſwer, that two kinds of troubleſomeneſſe may be deprehended in every ſenſe, beſides touching. The one is when the inſtrument of touching it ſelfe is offended, which is imparted unto all the reſt of the ſenſes: The other is when the proper ſenſe it ſelfe is offended; as when a ſcholler doth meditate, and is hindered by the ringing of bels; or when one having compoſed himſelfe to ſleepe, is troubled with the unpleaſant howling of dogges, noyſes of carts and coches, and clamours of drunkards, which is frequent enough here in London; where the hearing is offended; or when one with griefe and commiſeration doth behold his deare friend extinguiſhed with an apoplexie, who ſate with him at table immediately before his fall, which hath beene often ſeene, where ſenſe of ſeeing is troubled. But there is a great difference betweene the paine in the organ of touch, and theſe troublings of the other ſenſes: The firſt truly deſerveth the name of paine; but the ſecond may be termed averſations or diſlikings of the objects, rather than paines. This moved *Galen* to ſay, 1. *de ſympt. cauſ.* 6. delight and griefe happen to all the ſenſes, but not with the like evidence. But as

concerning paine, which offendeth the instrument of feeling, thus he writeth, *de different. sympt. c.* 3. The sense of touching, above all other senses, hath obtained a most remarkable symptome, to wit, paine in it action. And although other senses may feele griefe, yet this griefe doth onely proceed from their externall proper objects; but paine may happen unto the sense of touching, not onely from externall, but from internall affections also resting within the body, which sometimes have beene so vehement, that sundry persons have dispatched themselves. I will not goe about to confirme this last point, affirmed by *Galen*, seeing I am to deliver to you chirurgicall doctrine, and not historicall narrations. But who will give himselfe content, let him peruse and turne over the volume of *Shenkius* his Observations, where he shall reade examples more than enough. Thus much I thought good to deliver unto you concerning the nature of paine, which is an accident proper to the organ of touching: And although it be somewhat philosophicall; yet it cannot but be profitable for you, seeing it is able to enrich your understanding, that you may be able to expresse what is meant by paine, when it is named, and to discerne when it is a proper symptome of the instrument of feeling, and when by reason of the instrument of feeling it is communicate to other senses. It is now full time to set downe such topicall medicaments as are effectuall to asswage paine. These medicaments are of two kindes: for either they are Narcoticall or Anodine: Anodine medicaments by the Grecians are called ἀνωδυνα, and by others παυστικα, asswagers of paine. These medicaments are temperate, answerable to the constitution of our bodies: and therefore they maintaine the substance and naturall heat of the body. By their pleasant heat they gently open the pores of the body; by the subtilnesse of substance they enter into the pores, and make all the humours uniforme, they soften and looson the part, and so it becommeth lesse apt to receive paine: And if they exceed in heat a little, they open the pores more effectually, & discusse some of the thinnest

Anodine medicaments.

thinneſt part of the peccant humour which is moſt fierce, and ſo abate ſomewhat the cauſe of the paine. The Simples of this order are Camomill, Melilot, Dill, the Elder, Wall-woort, the ordinary Mallow, Marſh-mallow, the roots and flowers of Lilies, Fenugreeke, Linſeed, Barley, ſweet Sallat-oyle, oyle of ſweet Almonds, Mans greaſe, Capons greaſe, Swines greaſe, Gooſe greaſe, Butter without ſalt, Marrowes, creame and ſweet milke. Of theſe, oyles and cataplaſmes may be framed fit for your purpoſe. This parable medicament I commend unto you, *Reducatur unguentum album capburatum in formam liniminti oleo lilii. anathino, aut chamemelino, & applicetur.* Simples.

Narcoticall medicaments neither take away the cauſe of paine, neither aſſwage the paine, but ſtupifie the part, that it cannot feele that which is painfull: ſuch medicaments are cold in the end of the third degree, and in the fourth, which drive away the naturall heat and ſpirits from the part. Of this ſort are the water Lily, the Henbane, Hemlock, the deadly night-ſhade, Mandrake, the apple of *Peru*, the black Poppie and *Opium*, Darnell, and the ſeeds of the former Simples, of which Simples you may make both cataplaſmes and oyles. In ſtead of all other you may uſe this liniment, ℞. *unguent. popul. & albi caphurat. an.* ℥i, *ol. hyoſcyami & mandragor. an.* ʒi ß: *Miſc. ut fiat linimentum, applicandum parti vulneratæ.* Narcotical medicaments.

Now followeth the ſecond generall Symptome, which followeth after that a wound is received, λειποθυμία and συγκοπὴ, fainting or ſwooning: *Syncope* is derived from συγκοπτω, *concido*, to cut together, becauſe in it both moving and feeling are taken from the body, ſo that it lyeth for a time as if it were dead. *Lipothymia* differeth from it only in vehemencie: for in this the partie loſeth not altogether feeling, and cold ſweat doth burſt out; becauſe that that which cureth the greater griefe, is able to cure the leſſer in this ſame kinde. I will only diſcourſe of a *Syncope*, becauſe the nature of it being knowne, and the curation of it learned, the leſſe griefe, lipothymie or fainting, is eaſie to be dealt withall. Syncope.

Syncope. *Syncope* then is a ſudden decay or abolition of the ſtrength of the body, according to *Galen*, 12. *method.* c. 5. As *lipothymia* is only an imminution of the ſame: the part affected is the heart.

The cauſes of a *Syncope.* As for the cauſes, receive theſe Aphoriſmes. Firſt, a *Syncope* may happen when there is not matter miniſtred for the generation of ſpirits, as in famine. Secondly, it may happen when the conſtitution of the heart is altered by reaſon of ſome diſeaſe, as in peſtilent fevers. Thirdly, when a maligne matter is communicate to the heart, as it happeneth in a deadly mortification of a member. Fourthly, when the ſpirits are ſpent, and diſſipate by too great heat, watching, travell, immoderate evacuations. Fifthly, it may happen by antipathie, ſo it hath beene noted that ſome have ſwooned at the ſmell of a Roſe. Sixthly, feare alſo may be the cauſe. Seventhly, it happeneth when the ſpirits are ſuffocate by a crude humour or vapour. Eighthly, it may invade, when a maligne vapour is ſent from another part of the body to the heart, as in fits of the mother. Ninthly, the ſenſibleneſſe of the part wounded may be the cauſe, as if it be a joynt, nerve, tendon or membrane.

The ſignes of a *Syncope.* The ſignes of a *Syncope* are theſe: Firſt, the face groweth pale, the pulſe is ſmall, ſlow and unequall, a greene or yellow colour is preſented to the ſight, then the ſight becommeth dimme, the hands and feet become cold, ſweat breaketh out about the forehead, and at the laſt the pulſe altogether ceaſeth, moving, feeling and ſpeech are taken away, and the bodie lyeth for a while as if it were dead.

The Prognoſticks. As for the Prognoſtickes, receive theſe: Firſt, if a man come not to himſelfe againe after that he is rubbed with roſe water or *aqua-vitæ*, hath wine or ſtrong waters powred into his mouth, and hath had ſtrong ſneefing medicaments blowne up into his noſe, the *Syncope* is accounted deadly. Secondly, if a *Syncope* ſurpriſe one, who before was feeble and weake, it is dangerous. Thirdly, a *Syncope* proceeding from an inward cauſe is more dangerous than that which proceedeth from

from an outward cause. Fourthly, A *Syncope* which proceedeth from the oppression of the spirits is more easily cured, than that which proceedeth from the dissipation of these same, by reason of inanition. Fifthly, they who often sowne without a manifest cause, at the last they die suddenly. *Hippoc. 2. aphor. 41.* Sixtly, that *Syncope* which is a primarie affection of the heart is more dangerous than that which happeneth by the consent of other parts. Seventhly, when a *Syncope* happeneth by reason of immoderate evacuation of blood in wounds, wee have no cause to despaire, chiefly if the wounded party be of a good constitution: for blood by a good dyet is easily restored. Eighthly, when one doth come to himselfe after sowning, if the pulse and fresh colour returne not, he is like immediatly to fall into it againe. Ninthly, who goeth not about to prevent a *Syncope*, when he seeth a *Lypothomie* to have possessed the wounded party, he is to be accounted accessory to the death of him, according to some authors.

The curation.

Now as concerning the Therapeuticall point of this discourse, expect not whatsoever may be said of it: for many things delivered would be impertinent no way belonging to the practice of Chirurgery: and the discourse would require more time than the limits of this exercise can permit: I therefore will acquaint you with those meanes only, which your duty doth require. The curative meanes then are either externall or internall: As for the externall, these which follow are accounted most effectuall: First, the temples and nose are to be bedewed with odoriferous liquors. If the party be hot, apply such as are either temperate or not very cold, as the water of Orange flowers, the waters of medow sweet, balme, roses, the ordinarie sweet waters: If the party be cold, apply the spirits of balme, mints, wormewood, or Angelica. If the party wounded be a woman, you are not to rub these parts with things odoriferous, lest you bring on the mother. To these then use the spirit or extract of *castoreum* and rue, which are excellent. Secondly,

Externall meanes.

ly, uſe ſhaking of the body, frictions of the extremities, hard preſſing the parts adjacent to the joynts of the lower jaw under the lobes of the eares, ſhouting into the eare, and calling upon the party by his owne name, moyſtning of the tongue with *Theriaca Andromachi* diſſolved in cynamome water, having added a few drops of the oyle of Sage and Amber. See *Paræus lib. 8. de vulneribus. c. 14. Sennetus pract. li. 2. part. 4. c. 6.* If it be a ſtrong *Syncope*, it will not be amiſſe to pull hard the haires of the temples and neck.

Internall meanes.

As for the internall meanes, a Sop in ſtrong wine, as alligant, malmeſee, canary wine, or white baſtard is very good, ſo that the wine be drunke together with the toaſt. Confectio alkermes diſſolved in cinamome water, or treacle diſſolved in *aqua cæleſtis* and miniſtred are effectuall. If theſe medicaments be not at hand, give *aqua cæleſtis*, wormewood-water, balme-water, mint-water, yea, the common aqua vitæ muſt ſerve. I commend unto you this compoſition. ℞. *aq. card. benedict.* ℥iiij. *aq. theriacal. & cinamomi an.* ℥ß. *confect. Alkermes* ʒij. *diamargariti calid.* ʒiiß. *lap. Bezaar orientat.* ℈i. *ſyrupi acetoſitat. citri* ℥ij. *aq. roſ. odorifer. cochl. 3. Miſci ex l. a. Exhibeatur cochl. 1. 3ª. quaq; hora poſt agitationem.* If theſe meanes prove not effectuall, ſeeke for no other; for you ſhall leeſe your labour.

LECT. VII.

Of the ſtitching of Wounds.

IN the ſecond Lecture of this ſubject of Wounds, I affirmed the laſt ſcope and end which a Chirurgeon propoſeth to himſelf when he goeth about the curing of a wound, to be the reunition of the parts disjoyned by an externall inſtrument. I ſet down alſo the differences of unition, which were συμφυσις or agglutination, and συναρθρωσις or concarnation: give me leave to uſe theſe termes to expreſſe the Greek words.

Agglutination,

Agglutination, I ſaid to be the unition of parts ſeparate no middle ſubſtance concurring. This kind of union the Chirurgeons averre to be performed by the firſt intention. Agglutination.

Concarnation, I defined to be the unition of parts disjoyned by the intervention of a middle ſubſtance: This is ſaid by the Chirurgeons to be done by the ſecond intention: for the better procuring of unition in wounds I propoſed 7. duties, which a Chirurgeon is to performe to nature, to further her endevour in this action: which I hitherto have proſecuted in 6. ſeverall Lectures. Now the order of doctrine doth require that I ſhew by what meanes unition is procured in wounds. Concarnation.

Why *Symphyſis* is firſt to be handled.

Firſt of all, I will ſhew how agglutination is brought to paſſe: Then I will ſhew how συναρκωσις or concarnation is procured: And this order I have choſen for ſundry reaſons moving me thereto: For firſt, agglutination is a more ſimple kind of unition, becauſe it is performed without any middle comming between the wounded parts ſevered. Secondly, becauſe it is more ſpeedily performed than concarnation: Thirdly, becauſe in it there is neither ſuch art and skill, or ſuch choice of medicaments required, as are in συναρκωσις.

The indications for procuring συμφυσις.

Now to bring συμφυσις or agglutination the firſt kind of union to paſſe three curative Indications offer themſelves: Firſt, the brims of the wound are to be joyned together. Secondly, the parts joyned together muſt be ſo kept. Thirdly, Agglutinative medicaments muſt be applyed.

Firſt indication.

The firſt indication is to be perſormed by the Chirurgeon: for he is to bring together with his hand the brims or lips of the wound gaping: In bringing of the lips of the wound gaping together, five things are to be obſerved.

Things to be obſerved in joyning the brims of the wound.

Firſt is, that he bring gently, and by degrees, not violently or ſuddenly the parts ſevered. 1.

The ſecond is, that the parts disjoyned be equally brought together, not ſtretching one more than another, unleſſe one part will not admit dilating: as when it doth cleave to a bone, the other being fleſhy for a great diſtance, and at liberty. 2.

The

3. *Hydrelæum.* The third is, that if the brims of the wound have become ſtiffe, by reaſon of the cold aire (they having for a ſpace remained uncovered) they be fomented with *Hydrelæum*, the medicament made of oyle and water. The proportion of the oyle and water is to be conjectured from the conſtitution of the whole body, as well as from the temperature of the part affected. As for example: If the party wounded be of a dry and thin habit of body, more oyle than water is to be taken; as one part of water, and two of oyle; but if the habit of body be fleſhy and ſucculent, more water is to be uſed than oyle.

4. Fourthly, in this conjunction equalitie muſt be obſerved. So the ſuperficies of the one part of the wound muſt exquiſitly anſwer the ſuperficies of the other part: and there muſt be a due correſpondencie betweene the inner ſides. Otherwiſe the cicatrix will be ugly and unequall.

5. Fifthly, no doſill or pledget muſt be put betweene the parts of the wound ſeparated, when you meane to conſolidat the wounded parts by the firſt intention, for then you ſhall cauſe fleſh to grow, and procure the unition of the parts according to the ſecond intention.

Second intention, how it brought to paſſe. As for the ſecond intention, which is the keeping of united parts together, it is performed by three meanes. The firſt is by *Laqueation* or dry ſtitching, as it is termed: The ſecond is by *Sutura*, or ſtitching with a needle: The third is *Faſciis*, by rowling. *Laqueatio* or dry ſtitching is, when peeces of cloth being placed on each ſide of the wound, the parts of the wound disjoyned are brought together, by drawing the peeces of the cloth with a needle and thrid.

Dry ſtitching.

When this is to be uſed. This kind of ſtitching wee uſe in three caſes. Firſt is if wee cannot come conveniently to roule the wounded part, as in tranſyerſe wounds. The ſecond is, when the externall beautie is like to be empaired, by making of new ſcarres, as it happeneth in wounds of the face. The third is, when the parties wounded will not admit *Sutura*, or ſtitching with the needle; as women, and eminent perſons.

In

In the application of the dry ſtitch, three things are to be obſerved. The firſt is the preparation of the peeces of cloth. The ſecond is the meanes by the which they are to cleave to the wounded part. The third is the forme of them. Things to be obſerved in the application of it,

As for the firſt, the peeces of cloth muſt be ſtrong, that they yeeld not unto the threed, when they are drawne: Secondly, one muſt anſwer another: Thirdly, they muſt be hemmed, or doubled towards the wound; but they muſt be raveled where they are furtheſt from the wound. 1 2

As for the ſecond: The meanes by the which theſe clouts are to cleave to the skin firmly, ought to be wonderfull emplaſtick medicaments: I will ſet downe a few examples of ſuch. Formes of emplaſtick medicaments.

The firſt ſhall be this: Diſſolve Iſinglaſſe in vineger, and by boyling, bring it to the conſiſtence of glew. 1

The ſecond ſhall be this: ℞. *farin. volat. maſtiches, gypſi cocti, boli Armen. aloes, gummi tragacanth. & Arab. an.* ℈i. *fiat ex omnibus pulvis, qui ovi albumine admiſtus conſiſtentiam mellis referat.* 2

The third ſhall be this: ℞. *maſtich.* ʒii. *bitum. Judaic. carab. an.* ℈i. *colophon.* ʒi. *Adjecto pauco vernice paretur emplaſtrum durum, quod igne liqueſcat, quum uſus venit.* 3

The fourth ſhall be this: *Agitetur exacte albumen ovi in patina ſtannea: poſtea ita aſpergatur pulvis calcis vivæ albumini agitato, at vix appareat. Si pulveris plus ſatis deciderit, ſpiritu oris diffletur: Imbuantur telæ hoc medicamento, ac partibus vulneratis applicentur.* 4

As concerning the third, to wit, the forme of theſe clouts, let them be of the forme of the wounded part. If therefore the part be Triangular, let the clouts be Triangular. Howſoever, let the forme be ſuch, as is fitteſt to draw the wounded parts together. As for example, if the cheeke be wounded tranſverſly, becauſe the upper cloth muſt not bee quadrangular, (for ſo it ſhould cover the eye) it muſt be cut triangular, and reach to the temple of the head. 3

The distance of the tyings.

Now the tyings of the threeds ought to bee distant one inch from another: So much I have thought good to deliver unto you concerning laqueation or dry stitching. Now I am, according to the order of doctrine set down by my selfe, to discourse briefly *de Suturis* or stitching with a needle or needles.

Of stitching with needles.

Of stitching with needles these five points are to bee observed. First, what is meant by this stitching: Secondly, The divers kindes of it: Thirdly, The uses of it: Fourthly, The instruments which are used about this operation: The last point shall containe the Documents, which shall informe you how this operation is to bee performed according to art.

What stitching is.

Sutura then or stitching is the bringing together of the lips of a wound by a needle threeded, and the keeping of them together by these two meanes.

The differences of stitching.

Of stitching there are two meane differences, for either the brims of the wounded parts are kept together by the threed onely, or else the needle also is left in them.

1 The differences of stitchings performed by the threed onely.

Of the first sort of stitching there are three kinds. 1. Is *Sutura continuata*, or the glovers stitch: This kind of stitch we use in the wounded guts, when the excrements come out of the wound, and the guts must be stitched. Wee use it also when great branches of *aorta* and *vena cava* are wounded, and there is a great flux of blood if we can conveniently come to the vessels wounded.

2 The second kind of stitching is *Sutura non continuata*: This kind is performed by taking divers stitches each being distant from another, so farre as the largenesse of the wound shall require, and the Chirurgeon shall thinke fit: So many such stitches shall be taken as shall be able to bring the lips of the wound to a proportionate smoothnesse and equality of the skin. In every stitch the ends of the threeds are to bee cut off neere to the knots, that they stick not to the emplaster.

3 The third kind of this stitching is called *Gastroraphia*: This is used when the great muscles of the belly, and the

peritonæum are divided by a large wound. Of this I will diſcourſe when I come to the wounds of the *abdomen*.

The ſecond meane kind of ſtitching is, when both the needles are left in the wound, and the threed alſo is uſed. In this kind of ſtitching when the needles are paſſed through the lips of the wound, and they are brought together, the needles are left there, and twiſted about both the ends, as Taylors doe when they faſten their needles to their ſleeve: This ſtitching is to bee uſed in the cure of the hare lip, and when the *Trachea arteria* is wounded. In ſtead of needles wee may uſe ſilver or braſſe pinnes: And when they are twiſted about, their ends may be cut off with a paire of ſmall nippers, made for ſuch a purpoſe, to avoyd the cumberſomneſſe of the ſharp ends of the pinnes. The ſecond meane kind of ſtitching.

The uſes of ſtitching are three; for either we uſe ſtitching to procure a quick agglutination of the wound: And it is called *Sutura incarnativa*. And in this kind of ſtitching the brims of the wound are to be brought neere together. The uſes of ſtitching. 1

The ſecond uſe of ſtitching is to keepe the brims of a wound in a reaſonable diſtance one from another. And it is called *Sutura retentiva*: this kind of ſtitching we are to uſe when a wound cannot bee united after the firſt, but ſecond intention; wherefore in this the lips ought not to be too far aſunder, leſt the aire coole the parts too much; nor too neere, becauſe agglutination is not to be expected. 2

The third uſe of ſtitching is to ſtay bleeding, as when a veine or artery is wounded. This kind of ſtitching is called *Sutura ſuppreſſiva*. 3

Now the inſtruments requiſit for ſtitching are needles, threed, and the ſtitching quill. As for the needles, they ought to be either of ſteele or ſilver. Thoſe of ſilver will bend beſt, but then they muſt not be hardned by beating upon the anvill. The ſteele needles you may diſtemper by holding them lapped in brown paper wet for a while in the flame of a candell. But it is good to have ſtill ſome in readineſſe crooked as ſtreight. The inſtruments fit for ſtitching. Needles.

The points of the Needles.

Their points may be round, flat, three ſquare, or foure ſquare. The ſquare pointed needles pierce beſt. They ought to have good eyes, and well grooped, that they may receive the threeds readily, and couch them the better.

The threed.

As for the threed, we uſe moſt commonly white, or crimſon ſilke threed: blacke is to bee rejected, for it is moſt commonly rotten, and fretteth. But the Low-countrey white threed made of the beſt hemp hath no fellow: for it ſwelleth in the wound, and doth not ſo cut as the ſilk doth, which groweth ſmall, and cutteth too ſpeedily.

The ſtitching quill.

The ſtitching quill, called in Latine *Canaliculus ſeneſtratus*, ought for the credit of the Chirurgeon to be of ſilver. It hath two uſes. Firſt, it keepeth the needles. Secondly, it ſtayeth the oppoſit part of the wound, that the needle may the more readily paſſe through the adverſe lip. Now onely remaineth that I ſet downe according to my propoſition ſome Documents which teach what remarkable things are to bee obſerved, when you goe about to ſtich. Theſe are in number thirteen.

Documents about ſtitching.

1 1. Wee are to labour to ſtitch with the greateſt eaſe that may be, that the patient may the better endure it.

2 2. Let the lips of the wound bee with moderation brought together: for if they be too ſtraitly drawne together, the flowing of the quittour will bee hindered, and ſo a tumour will bee procured: But if they be left gaping, the inner parts will be cooled by the aire.

3 3. The knots of the threeds muſt bee ſure: otherwiſe they may looſe, and ſo wee muſt bee inforced to ſtitch the ſecond time, which will bee more terrible to the patient than the firſt.

4 4. In ſtitching we muſt beware of the chords and ſinewes: for if they be touched, great paine will enſue.

5 5. If ligaments be cut aſunder, we are not to ſtitch them, for it is but labour loſt, becauſe they are onely united by the ſecond intention.

6 6. In all parts of the body the skinne may be ſtitcht, yea even

even in the joynts, deepe wounds, and wounds of the bones, after they are ſmoothed with the raſpatory: for by this meanes the ſpermaticke parts are covered, defended from the aire, the naturall heat is kept in, and the cure is better performed.

7. A reaſonable quantity of the brims of the wound is to be taken by the ſtitches, otherwiſe if the ſtitches breake, wee ſhall cauſe filthy tranſverſe ſcarres. 7

8. Let the ſtitches bee diſtant by the diſtance of the breadth of the fore-finger, or the leaſt finger at the leaſt: for if they be too thick, they will cauſe the more paine; if they be too thin, they will hinder the unition. 8

9. In deepe wounds of fleſhy parts wee muſt take deep ſtitches: for if the skin onely be ſtitched, the wound will only ſuperficially heale: and the quittour ſetling in the bottome, will cauſe apoſtemation and a hollow ulcer. 9

10. In ſtrait wounds of the limmes wee may ſpare ſtitching: for the lips may bee brought together by laqueation and rowling: But if the wounds be tranſverſe, we are alwaies to uſe ſtitching, becauſe the fleſh and all other parts in ſuch wounds ſhrink towards the ſound parts, and ſo gape much. 10

11. If wounds bee in the joynts, wee are to draw a good quantity of blood. Firſt, becauſe the joynts are weake, and ſo apt to receive the influxion of humours. Secondly, becauſe they require ſtrong deſiccation. Thirdly, becauſe the joynts being weake, it may bee feared that too much blood may cauſe the ſuffocation of the naturall heat. 11

12. In wounds of the ventricles phlebotomy is not ſo neceſſary. Firſt, becauſe they require not great deſiccation. Secondly, becauſe if wee uſe large phlebotomy in them, we take away the fewell of the naturall heat, wherewith they abound. 12

13. In long wounds we are to begin from one of the ends; but in ſhort wounds (as in curing the hare lip) we are to begin at the middle; for ſo wee ſhall ſhunne purſing together 13

of the lips of the wound, which will cauſe inequality in the skin, and ſo deformity.

LECT. VIII.

Of Agglutinative Medicaments, and Rowling.

IN my former Lecture I affirmed, that the lips of wounds which are to be united by agglutination, ought not only to be brought together, but to bee kept ſo alſo: I ſet down in like manner three meanes by the which the brims are kept together: to wit, laqueation or dry ſtitch, *ſutura* the ſtitching with needle and threed, and *faſciæ* rowling.

Rowling. Having amply diſcourſed of the firſt two, now am I to ſpeake of the third meane, to wit, Rowling. *Faſciatio aut deligatio per faſciam*, is when wee labour to keepe the lips of the wound, that they may the ſooner and more firmly be united together by the meanes of rowling. As concerning this meane, which induſtrious Chirurgeons have deviſed, to attaine to their end and ſcope, which is the unition of the parts disjoyned, I will ſet downe theſe three points. The firſt ſhall bee of the matter of rowlers. The ſecond ſhall be of the divers kinds of rowlings in wounds. In the third point I will ſhew how they are to be applyed according to art.

The matter of rowlers. As concerning the matter of rowlers, they ought to be of linnen: for woollen rowlers are apt to admit ſtretching, and ſo cannot make ſuch conſtriction as thoſe of linnen doe. Secondly, they cauſe itching, and heat the part too much, by which meanes attraction of humours is cauſed, which altereth the naturall temperature of the part, and ſo hindereth the unition of the parts of it ſevered.

The qualities of linnen rowlers. Now the linnen rowlers muſt not bee of cloth too new, for then they will be too ſtiffe and hard: nor of cloth too much worne, for then they will bee too weake. Neither muſt

muſt they bee of cloth too thick, for then they will bee too heavy and boyſterous; or too thin, for then they will bee moſt apt to receive wrinkles, which is unſeemly. They muſt alſo bee of even cloth, not having unequall threeds; for ſo they will cauſe pits in the skin. Beſides this, they ought to be cleane; for filth in rowlers, ſtoppeth the pores and hindereth the perſpiration, and ſo may bring inflammation.

The Dimenſions of rowlers.

As concerning the Dimenſions of rowlers, thoſe which are appointed for the trunke of the body, ought to bee broadeſt; then thoſe which are ordained for the thighes: Next unto theſe, thoſe that are to bee applyed to the armes: The narroweſt are moſt fit for fingers and toes. As for the length, it is to bee found out by the number of circumvolutions as ſhall be found fit and requiſit.

Galen de Faſciis.

As concerning the divers ſorts of rowlings, *Galen* hath left a whole Treatiſe of them; by his paines and labour hee hath deſerved a thankfull commemoration from all poſterity. But all what hee hath ſet downe cannot bee applyed to this ſubject which we have in hand: Onely foure kinds do ſerve our purpoſe, to wit, *Incarnativa*, *Retentiva*, *Expulſiva*, and *Æquans*.

Faſcia incarnativa, and its kinds.

Faſcia Incarnativa, or the manner of rowling appointed for agglutination, is of two ſorts.

1

The firſt is performed by a rowler with two ends. Now in this ſort we muſt begin to rowle in the ſound part oppoſit to the wound, and rowle upwards, and ſo returne to the wounded part with one end; with the other end we are to rowle downwards, croſſing the former, that the lips of the wound may be artificially brought together. In this kind of rowling the wound muſt be twice as broad as the rowler, becauſe by this kind of rowling the rowler doth draw the wound together two times: Once rowling upward, and once rowling downward, and ſo to avoyd wrinkling the rowler ought not to be ſo broad as the wound.

2

The ſecond kind of agglutinative rowling is performed by one cloth, which muſt bee broader than the wound. The middle

midſt of it wee apply to the ſound part, that the ſides may meet above the wound; then we are to ſow the ſides of the rowler together with a tranſverſe ſtitch. But this kinde of rowling is not ſo ready as the firſt, becauſe at every dreſſing we muſt cut the former ſtitches and uſe new. *Fascia retentiva.*

Fascia retentiva, is that kinde of rowling, which is uſed to keepe cloſe to the wounded part the applications, as pledgets, emplaſters, boulſters, clouts, and ſuch like. A ſimple rowler will ſerve for this purpoſe. This kinde of rowling ought to be no ſtricter than is ſufficient to ſtay the applications; otherwiſe, it may hinder the influence of the nouriſhment to the part, and ſo procure a ſideration or mortification of the wounded part.

Fascia expulsiva.

The third kinde of rowling is called *fascia expulsiva,* or the repelling kinde of rowling. This manner of rowling ſuffereth not any thing to lodge in the cavity of the wound. Now ſeeing defluxions moſt commonly invade the dependant parts in this caſe, wee are to begin our rowling in the ſound parts below the wound, and ſo to proceed to the wounded part; whither when you are come, you are to uſe fewer or more looſe circumvolutions, and ſo to aſcend to the ſound part above the wound, and then to uſe more ſtrict rowling to hinder the deſcent of any humor; and ſo by this ſame kinde of rowling wee wring out the matter which hath alreadie flowed, and hinder the influence of any new matter. *Fascia aequans.*

Fascia aequans, or a ſmoothing rowling, is that which reduceth unequall parts, whereof ſome are high, ſome low, to a decent equality: This is brought to paſſe by boulſters and a ſimple rowler.

Other ſorts of rowlings.

There are other ſorts of rowlings beſides theſe, yet either not ſo neceſſary, or belonging to other operations in Chirurgery; as *fascia prohibitiva apostematis,* that kinde of rowling which hindereth apoſtemation. In this caſe wee are to begin our rowling about the wound, and to goe upward to the joynt of the ſound part. Contrary to this is *fascia apostematis factiva,* that kinde of rowling which cauſeth apoſtemation. There is alſo *fascia disjunctiva,* that kind of rowling

ling which keepeth parts aſunder, and *faſcia directiva*, that ſort of rowling which reduceth diſtorted and crooked members to their naturall figure: Of theſe I will diſcourſe when I reade of thoſe points wherein they are required.

Duties required of a Chirurgeon in rowling.

Now concerning rowling, this only remaineth, that I ſet downe ſome duties which are required of a Chirurgeon when he goeth about to rowle. The firſt is, that he be nimble and quicke in diſpatching, that the patient be not wearied. The ſecond is, that he carry a light hand, for ſo he ſhall not hurt the patient. The third is, that he rowle handſomely to content the eye. To performe this, we are to have a care that threeds hang not at the rowler, leſt wee may ſeeme to have robbed beggers of their rags. In my former Lecture I affirmed that σύμφυσις, or agglutination, was performed by three intentions: to wit, by bringing of the lips of the wound together, by keeping them together, and by application of agglutinative medicaments. Having ſet downe how the two firſt indications are artificially to be done; now am I to deliver unto you what agglutinative medicaments are fitteſt to procure agglutination.

1

Glutinative medicaments.

Of theſe medicaments I will deliver theſe three points: The firſt ſhall be of their matter: The ſecond ſhall be of the divers kinds of them: The third ſhall ſet downe the artificiall application of them. As for their matter, they ought to be cooling or temperat to hinder inflammations, and aſtringent to reſiſt the influxion of humours, and drying to haſten conſolidation. Theſe medicaments are of two ſorts; for they are either ſimple or compounded. Theſe which follow are to bee accounted Simple: *Hypericum, Sideritis Achillea, Polygonum, burſa paſtoris, equiſetum, ſigillum Salomonis, conſolida major, bugula, ophyogloſſum, Valeriana, panax coloni, centaurium utrumque, ſolidago Sarracenica, plantaginis ſpecies, pentaphyllum, Taßacca, carduus benedictus, ſanicula, alchymilla, cariophyllata, lunaria minor,* [a] *vinum rubeum aſtringens, rhus coriariorum, aqua aurifabrorum, albuminibus ovorum clarificata, Humor melleus veſicis, quæ lateribus foliorum ulmi menſe Maio adherent concluſus.* It hea-

Their matter.

Their kindes.

The ſimple.

[a] *Galen. 4. de ſimp. facultatib. c. 8.*

leth wounds very ſpeedily; thus it is to be prepared: Fill a glaſſe with this liquor, then ſtop it well; then bury the glaſſe a foot deepe in the ground, and cover it with ſalt; ſuffer it to remaine there for the ſpace of twentie or five and twenty dayes: laſt of all, ſeparate the cleare liquor from the *fæces*: the naturall Balſame is; Of this kinde are *Burnet, Perwincle, bole, terra ſigillata, lapis hæmatites, coralium utrumque, galla immaturæ, myrtus, ſanguis draconis, omnes reſinæ, gummi elemni, ſanguis draconis.* Of theſe you may frame unto your ſelves compound and effectuall medicaments. The compound medicaments are either in forme of oyles, which are called Balſames, or in the forme of an unguent, or in the forme of an emplaſter. I will acquaint you with ſome patternes of all the three formes: The efficacie of them ſhall recompence the paucitie. This ſhall be the patterne of a Balſame: ℞. *Ol. olivar.* ℔. 2. *ſucci Nicotianæ* ℔. ß, *gemmarum hyperici, ſaxicula, alchymilla, ſigill. Salamon. cariophyllat. hortenſ. phyogloſſ. pyrol. valerian. alchymill. panar. colon. an. man.* i. *Herbæ minutim inciſæ admiſceantur oleo, & ſuccо Nicotianæ: poſtea coquantur omnia lento igne ad conſumptionem humiditatis aqueæ, at coletur Balſamus, cui admiſce ol. lumbricorum* ℥iiij. *terebinthinæ & vernicis claræ an.* ℥ij. *Servetur Balſamus in vaſe ſtanneo aut vitreo, ſz. mundo.* I need not to commend this Balſame unto you, ſeeing the ingredients themſelves doe ſhew of what efficacie it is in conſolidating wounds. *Fabricius ab aqua pendente* exceedingly commendeth the greene Spaniſh Balſame; but I mean not to miſ-ſpend time in ſetting it downe, ſeeing you may finde the deſcription of it in his ſecond part of Chirurgicall diſcourſes. As concerning Unguents, of all which you uſe, *Franciſcus Arcæus* his liniment is the beſt for this purpoſe: The learning of the Author, and his extraordinary skill in the practice of Chirurgery doth (I make no doubt) perſwade you of the efficacie of the medicament. Nevertheleſſe this ſhall not hinder me from ſetting downe the forme of an Unguent compoſed of the ſimples before named by me, which you ſhall finde effectuall, not in wounds onely, but in ulcers alſo: I deſire not

The compound medicaments.

The patterne of a Balſame.

not to be credited, before experience ſhew the excellence of the one above the other: The deſcription of the Unguent ſhall be this: ℞. *Axung. porcin.* ℔. 1. *colophon.* ℥vj. *ceræ* ℥iij. *gummi elemni* ℥ij. *ſuccl Tabaccæ* ℥ix. *ſanicul. alchymill. gemmat. hypen. card. benedict. ophyogloſſ. vine. per vinc. ſigil. Salomon. Pimpinell. valer. centaur. maj. & minor. an. man.* 1. *Herbæ inciſæ miſceantur cum prædictis: poſtea coq. omnia lento igne ad conſumptionem humiditatis aquæ, at coletur unguentum: cui admiſc. vernicis clarę, ac terebinthin. Cypr. an.* ℥j. *Tandem reponatur unguentum donec uſus poſcet.* The ingredients will ſhew you what benefit is to be expected from the application of it to wounded parts. The forme of an Unguent.

As concerning Emplaſters, I meane not to ſet downe any curious deſcriptions for the curing of a wound by the firſt intention, ſeeing a familiar one will ſerve the turne; receive this then: ℞. *reſin. abiet.* ℔. iiij. *cerę* ℔. 1. *ſevi ovilli* ℥iiij. *gummi elemni* ℥iij. *ſucci Nicot. & melilot. an.* lib. ij. *Nicotian. contuſ. man.* ij. *fiat emplaſtrum ſecundum artem.* This is not a little better than the common melilot, cheape, and parable. As for other wayes of curing, know firſt, that cold water is not fit to be uſed; although *Celſus, lib.* 5. *c.* 26. affirme that it may ſerve for ſuch wounds as Nature her ſelfe is able to cure. For firſt, cold is hurtfull for wounds: Secondly, it may procure a gangren in bodies which have ſmall ſtore of naturall heat. Oyle in like manner is not convenient if it be ſimple, becauſe it moyſtneth too much. The whites of egges alſo are to bee rejected when wee meane to glutinate a wound: firſt, becauſe they ſpeedily drie: ſecondly, becauſe they doe not penetrate; yea, if glutinative powders be mingled with them, they hinder their penetration. But what ſhall wee ſay of hallowed cleane clouts? I anſwer, that they alſo are not to be uſed, becauſe they only drie the ſuperficies, and paſſe not to the cavitie of the wound: As for the hallowing or bleſſing, it is but a device of craftie mates, abuſing the credulitie and ſimplicitie of the common people. The forme of an Emplaſter. Other meanes of curing.

Now to ſpeake a word or two of the application of theſe medi-

Of the application of theſe medicaments.

medicaments, which was the laſt point propoſed by me to be handled, concerning medicaments: If the wound afford but ſmall ſtore of matter, it is only to be dreſſed every other day; but if plentie of matter flow, it is to bee dreſſed once every day, but never twice a day, for then the aire will doe more harme, than the medicament good. Wherefore they palpably erre, who thinke often dreſſing to further conſolidation. Secondly, if you perceive the lips of the wound to be conſolidate or agglutinate, ſtraight wayes cut the ſtitches, whether this happen the ſecond, third, or fourth day: for unition after the firſt intention is moſt commonly performed in this time: The next day following, when you ſee the lips firmly to cleave together, pull out the threeds with your forceps, or fingers.

LECT. IX.

How a Wound is to be cured after the ſecond intention.

IN the former two Lectures I have ſhewed unto you how wounds are to be handled, which are to be cured by agglutination, or the firſt intention: Now time and order of doctrine doe admoniſh me to goe on, and to teach in like manner how wounds are to be dreſſed, which are to be united by the ſecond intention, called by the Grecians συναρκωσις, which may bee expreſſed by this word Concarnation. It is not amiſſe ſometimes to coine vocables of art to expreſſe the matter which is in hand.

The indications of curing of a wound by the ſecond intention.

Now to cure a wound after the ſecond intention, three curative indications doe offer themſelves. The firſt is to procure the filling of the wound by new fleſh. The ſecond is to abate the fleſh, if it become ſuperfluous: And the third is to skin the part wounded, when ſufficient fleſh is growen.

As

As for the firſt indication, which is the filling of the gaping of a wound with fleſh; of it you are to conſider the motives, which induce you to goe about this manner of unition, and the meanes by the which it is brought to paſſe. In five caſes you are to go about the conſolidation of wounds by the ſecond intention. The firſt indication.

When wee ought to cure by the ſecond intention.

The firſt is, if there bee loſſe of ſubſtance, whether it bee fleſh, or any other ſubſtance, as bone, cartilage, or ligament. Neither is this a generall rule: for if the parts be looſe and flaggy, they may admit unition after the firſt intention: as we may perceive in the curing of the hare lip, and wounds of the fore part of the neck. 1

Secondly, you are to attempt this kind of curation, where you cannot conveniently bring the lips of the wound together by ſtitching or rowling: as in great wounds of the joynts, and when the ligaments are cut aſunder, as the great tendon, which is called *Nervus Hectorius*, and is inſerted into *Os calcis*. 2

Thirdly, this is to be done when we looke for the ſcaling of a bone, or the ſeparation of a peece of a ligament or cartilage. 3

Fourthly, wee are to take this courſe, when otherwiſe a great and dangerous flux of blood cannot be avoyded, as in wounds of the neck, where the internall jugular veines and ſoporall arteries are divided. 4

Fifthly, we are to addreſſe our ſelves to this manner of unition, when great ſtore of quittour is like to flow to the wounded part; and this doth fall out in foure caſes. 5

When great ſtore of quittour is to bee looked for.

The firſt is, when we cannot hinder the influxion of humours by rowling, as in wounds of the arme-pits and joynts. 1

Secondly, in cacochymicall bodies. 2

Thirdly, in perſons who have a ſcirrhoſity in the Liver and Spleene. 3

Fourthly, if the wounded party have a contagious diſeaſe, as the Pox. In theſe caſes we are rather to attempt unition by the ſecond, than firſt intention, eſpecially if we feare no deformity 4

formity by reaſon of a ſcarre: As it happeneth in wounds of all the parts of the body, if you except the face.

Why wounds with loſſe of ſubſtance are not to be cured by the firſt intention.

The cauſes which ought to induce you not to attempt unition after the firſt intention, when there is loſſe of ſubſtance, are theſe: Firſt, paine and inflammation will enſue by reaſon of the violent bringing of the lips of the wound together: Secondly, there will remaine a great deformity in the part wounded after that is cured. So much then concerning the occaſions, which are to admoniſh a Chirurgeon, when hee is about to cure a wound, whether hee ought to performe this by the ſecond intention.

The meanes fit for incarnating.

Now am I to ſhew unto you what meanes are moſt apt to generate new fleſh: Theſe meanes are in number three: The principall efficient cauſe: The cauſes adjuvant: The materiall cauſe.

The principall efficient cauſe.

The principall efficient cauſe is the naturall temperature of the whole body, and of the part affected alſo, which ought to incline to drineſſe: If it bee preſent, it is to bee maintained; but if you find it not, you are to procure it by phlebotomy, purging, and the right ordering of thoſe things which are called not naturall: But ſeeing I have amply diſcourſed of theſe points, when I ſet down the methodicall curation of ulcers, I will remit you to that Treatiſe, and will not trouble you with a fruitleſſe repetition of theſe ſame things.

The adjuvant cauſes.

The adjuvant cauſes are two, to wit, the Chirurgeon, and convenient medicaments. As for the Chirurgeon, hee ought to dreſſe the party with as much eaſe as may bee. Secondly, he ought to have a care that the applications bee applyed to the wound very neatly: for by want of this a ſlubberer and ſloven is diſcerned from a cleanly workman. This the Chirurgeon can hardly performe, if he bee not cunning in fitting of the linaments, upon which the medicaments are to bee laid, which are to bee applyed to the wounded part.

Linaments.

Now the linaments are of three ſorts; *Turundæ*, *Tentæ*, and *Splenia*. *Turundæ* or doſils repreſent an olive in figure.

Tentæ

Tenta or tents are long, and somewhat small. *Splenia* or pledgets ought to represent the spleene of living creatures, from whence they have their denomination.

The pledgets which are applyed ought first to bee somewhat larger than the wound: Secondly, they ought to bee armed with medicaments which have a moderate tenacity or clammineſſe, and which ought to have a faculty to ſtay an inflammation, to aſſwage paine, and to repell humours, which might flow to the part. Such are *diapalma* diſſolved in the oyle of Myrtils, quinces or roſes, *Unguentum de tutia magiſtrale*, *unguentum de minio*. If for the preſent you be deſtitute of theſe compoſitions, you may uſe the red aſtringent wine, or tanners wooſe, or Smiths water clarified, mingled with one of the oyles before named: and then it is good to moyſten the rowlers in this medicament. Theſe liniments are to bee made of lint or tow; the tow ought to bee without ſhivers: It dryeth more than lint if it be of hemp. The application of pledgets.

The materiall cauſe of the generation of new fleſh is laudable blood, anſwering the temperature of the part wounded. So if a ſpermaticke part bee wounded, the blood ought to bee ſomewhat cold, thick and dry, which is to gender a meane to unite the parts ſevered. But if a fleſhy part bee wounded, the blood is to bee hotter and more humid. Having ſet downe the part of the Chirurgeon, whom I affirmed to bee the firſt adjuvant cauſe, in producing new fleſh, now am I to acquaint you with thoſe medicaments which are termed by Artiſts Sarcoticall, or apt to engender new and tender fleſh.

All Sarcoticall medicaments, as they ought to be of a drying faculty, ſo they ought to be voyd of a ſharp and biting quality. The differences of drying medicaments are either taken from the degrees of their drying quality, or from the diverſities of their kinds: from the degrees of drying theſe three differences are drawen: For either they are of a meane operation, and theſe will ſerve when the quitture is *albim*, *leve*, and *equale*, white, ſmooth, and of an equall ſubſtance, Sarcoticall medicaments. The degrees of drying medicaments.

one

one part of it not being thin, & the other grumous. Or they are somwhat stronger, as when the matter which floweth from the wound is thin and ichorous; for then stronger deficcatives are required to incrassat or thicken this thin matter. The third degree doth comprehend the strongest deficcatives: as when *fordes* or a sluch appeareth in the wound. These medicaments are called *Medicamenta detergentia*, by the Chirurgeons mundificatives, and these medicaments according to *Galen* 1 *Method.* 12. ought to bee of a drying and penetrating faculty: for those things which are united in the bodies of living creatures, are united by moysture: Wherefore dryneſſe spending the humidity, they are againe separated; as we may for an example see in a table glewed together, if it be too much dryed by the fire.

The two kinds of drying medicaments.

Now there bee two kinds of these drying medicaments, for either they are simple or compounded. The simple drying medicaments according to *Galen* 3. *Meth.* 3. are of three sorts.

Simple drying medicaments and their degrees.

The first, dry in the first degree, for those who have but a tender and soft constitution of body, as are children and young Gentlewomen. Children are esteemed to be of this constitution, untill they attaine to the fourteenth yeere of their age.

The second sort is of such as are dry in the end of the first degree, and the beginning of the second.

The third sort is of such as are dry in the end of the second degree: And as these befit bodies of very hard and firme constitution of body, such as saylers, and artificers of hard trades have, as smiths and felt-makers: So the second sort of deficcatives are fittest for such as are of a meane habit of body, neither too loose nor too hard, as Gentlemen in their consisting age.

Deficcatives in the first degree.

Unto the first degree of Desiccatives these may be referred: *thus, farina hordei, & fabarum, ut & zeæ utriusque, mastiche, olibanum in gutta.*

2 To these of the second degree you may referre all sorts of rosines, as the yellow, the black ship pitch, and *elemni*, clarified

fied hony, *farina cicerum, & metallica quædam, vt minium, lithargyrium, plumbum uſtum; ſed omnia lota.*

To the third degree you may referre *farina orobi amari, lupinorum, iridis, ariſtolochiæ utraque, mirrhæ, ſarcocollæ, lapis calaminaris, tutiæ, Æs uſtum.* 3

So thoſe ſimples which are drying in the firſt degree, ſerve for thoſe who are of a ſoft habit of body: Thoſe which are in the ſecond degree, ſerve for thoſe who are of a meane habit: but thoſe which are of the third degree, are fit for thoſe who are of a churliſh habit of body, as I have noted. Now what I have ſpoken of the habit of the whole body, I would have you to apply it to the habit of every ſeverall part: So the fleſhy parts are ſofteſt, although there be degrees amongſt them: The lips are ſofteſt of all: The ſinewes and membranes are of a meane hardneſſe, but the cartilages and bones are hardeſt of all. The uſe of theſe.

Of theſe ſimple Sarcoticall medicaments, you may frame unto your ſelves ſundry compoſitions as occaſion ſhall move you: Onely I will ſet downe one for a paterne, and it is this: ℞. *Balſam. hypericon. ſimpl.* ℔. ß. *reſin.* ℥vj. *ceræ* ℥iv. *picis navalis,* ℥iii. *gum. elem.* ℥ij. *vernic. & ſevi ovil.* an. ℥iij. *terebin. Cypr.* ℥i ß. *olib. & mirrh. pulveriz.* an. ℥j. This I have termed my *Baſilicum Magiſtrale:* I will not ſtand much upon the commendation of it: the effects will praiſe it. If variety of ſuch compound Sarcoticall medicaments doth delight any one, let him have recourſe unto the diſpenſatories of ſundry men, and nations: If he be not by them ſatisfied, I ſhall thinke that hee hath *appetitum caninum* of the imagination. The compound drying medicaments. *Baſilicum magiſtrale.*

One thing is to be noted, that cathereticall medicaments, as *Alumen uſtum, Æs viride,* and *Vitriolum calcinatum,* may become ſarcoticall, if they bee mingled in compoſitions with ſarcoticals in a ſmall quantity. *Nota.*

It is not enough in curing by the ſecond intention to procure the growing of new fleſh in wounds; but we muſt bee wary that it doe not overgrow. If this happen, we muſt take order with it. The cauſe of ſuperfluous fleſh is too much How ſuperfluous fleſh is to be removed.

blood sent unto the part. This is abated by appointing a strict dyet, & the use of aliments, which do not feed much. Secondly, cooling and astringent medicaments are to be applyed to the sound parts adjacent to the wound. Thirdly, wee are to use hard frictions and strait ligatures to the oppolit part: For by all these meanes the immoderat influence of blood is stayed.

How proud flesh is abated.

Now superfluous or proud flesh is taken away three manner of wayes. First, by an instrument, as an incision Knife or a Rasor. Secondly, by rubbing it away by a rough linnin cloth. Thirdly, it is removed by Cathereticall medicaments: such are *alumen ustum, vitriolum calcinatum, Merc. præcipitatus*. If the party wounded be of a tender habit of body, *Merc. præcipitatus lutus* will serve being thus mingled: ℞ *ung. basilic. magistral.* ℥i. *Mer. præcipitati loti* ℥i. *exquisite misceantur*: But if he or shee be of a hard & stubborne habit, let this medicament bee made: ℞ *Merc. præcipitat. n. loti* ℥ij. *aluminis usti* ℥i. *super marmor Pictorum levigentur: postea* ℞. *hujus compos.* ℥i. *ung. Basilici magistra.* ℥vi. *Optime misc.* If you apply the aforesaid powders unmingled with an unguent, they will cause an eschar if need bee. Whosoever hee bee that hath brought a wound to that passe, that the supercrescent flesh doth require a stronger cathereticall medicament than these, he must be a novice in his Art.

Of skinning of a wound.

The wound being thus sufficiently incarnat, nothing doth remaine, but to cicatrice it. Concerning cicatrizations these three questions may arise. First, what manner of skinning is most laudable. Secondly, when we are to goe about skinning. The third shall bee of the causes which procure skinning. To the first I answer, that the cicatrix which in colour and conformation best representeth the naturall skin, is most laudable. To the second question I answer, that we are not to goe about the skinning of the wound before the flesh bee somewhat higher than the naturall skin: for otherwise the cicatrix will bee hollow, which is unseemly. If a peece of a bone either be taken out or cast, we cannot shun a hollow cicatrix. As for the causes:

The

The efficient cause is a faculty resident in the sound skin, adjacent to the wound: So wee see skinning to begin from the brims of the naturall skin. The efficient cause of skinning medicaments.

The materiall cause is flesh hardned. The, materiall.

The adjuvant causes are epuloticall or skinning medicaments. The adjuvant.

As concerning the medicaments, we are first to consider their faculty, secondly, to set downe their kinds. As for their faculty, they ought first to dry strongly, and to reach to the end of the third degree of desiccation; because such medicaments ought not onely to consume the extraneous humidity, but the naturall also. Secondly, seeing they are to stay the influxion of more blood, which might ingender more new flesh, they ought to bee very astringent, so that it may be discerned by the tongue and palat. Yet they are to have no acrimony, for then they would erode.

These medicaments are of two sorts, for they are either simple or compounded. For wounded persons of a soft habit, these will serve; frankincense, the barke of the Pyne tree, lead calcined and washed, oyster shels burned and washed: for those who have a meane habit of body, these will serve which are drying in the beginning of the third degree; as are the unripe gales, the flowers and rinds of the wild pomgranats, sumach, the myrtill berries, *sanguis draconis, terra umbra, rubrica fabrilis.* For those who have a very hard habit of body, use *Æs ustum, alumen ustum, caput mortuum, vitrioli distillati ablutum.* The divers kinds of cicatrizing medicaments. Simple epuloticks.

The compound Epuloticks are in like manner of three degrees: For some are for tender bodies, as *Unguentum de minio, ceratum de minio, unguentum de tutia:* Some are for bodies of a meane habit; these will serve for such: *diapalma, unguentum de tutia magistra, cujus hæc est compositio:* ℞ *ol. ros.* ℥xii. *ol. myrtin. & ung. popul. an.* ℥iii. *fol. plantag. & solan. hortens. contus. an. man.* ii. *evaporet lento igne humiditas aquea, atque instituatur colatura, in qua liquescant cer. alb.* ℥iv. *Quum incipit medicamentum frigescere, insperge litharg. auri* ℥vi. *tutiæ præpar.* ℥i. *cerus.* ℥ii. *minii* ℥vi. *caphur.* ℥i. *Omnia hæc pulverizentur. Ducatur hoc unguentum* Compound epuloticks.

guentum per hor. 2. *in mortario plumbeo.* For thoſe that are of a hard habit of body, uſe this *unguentum de tutia magiſtrale*, adding to every ounce of it *æris uſti* ʒi, or *vitrioli. ad rubed. calti* ʒſ. You have in the Apothecaries ſhops *unguentum de bolo Armeno.*

LECT. X.

Of a convulſion in wounds.

HItherto I have delivered unto you ſuch precepts as concerne all wounds in generall. Now the method which I propoſed unto my ſelfe in the beginning of this Treatiſe of wounds, doth require that I ſet downe in like manner ſuch points as concerne all particular wounds.

The differences of wounds.

The meane differences of wounds are taken from three things. The firſt from their accidents: The ſecond from the nature of wounds: The third from the parts affected. From the accidents wounds may be ſaid either to have been knowne unto the Ancients, or not to have beene knowne unto them. From the nature of wounds theſe differences are taken: Wounds are either ſimple or compound. A ſimple wound is, which hath neither any cruell ſymptome, nor any other kind of griefe, which may draw the Chirurgeon from going about the curing of it, according to the intentions ſet downe in the generall doctrine of wounds. Thither then I ſend you *Lect.* 7. *Lect.* 8. *Lect.* 9.: for I meane to avoid fruitleſſe repetitions. A compound wound is, which hath either a cruell ſymptome, or ſome diſeaſe, or both annexed.

A ſimple wound.

A compound wound.

The number of ſymptomes.

The ſymptomes are in number five: Paine, Fainting, a Convulſion, a Palſey, and Cruditie. Of paine and fainting I have diſcourſed already; becauſe they happen often, as well in ſimple as compound wounds, as hath been ſhewed *Lect.* 5ª Wherefore I am only to ſpeake of the laſt three: of the which a convulſion is the firſt: If you require a deſcription of it, receive

Of a convulſion.

celve this: A convulsion is a contraction or drawing together of the muscles or parts which are appointed for voluntarie motion towards their beginning; which are either the braine, or the *spinalis medulla* or chine of the back.

A convulsion is two-fold: for it is either naturall or unnaturall: A naturall convulsion happeneth when one of two muscles appointed for a motion is contracted, the other being transversly wounded. This is to bee seene in wounds of the head, when one of the temporall muscles is transversly cut asunder, and in wounds of the fingers: for if the inner muscle of a finger be cut asunder transversly, the outward muscle is contracted. An unnaturall convulsion is which happeneth not because one of two muscles ordained to performe this same action is transversly wounded. This is two-fold, *Motus convulsivus*, and *conversio vera*. *Motus convulsivus*, or the convulsive motion, is caused of a thin and halituous matter, moving to and fro, tossing the nerve: And it doth not continue long; for in the part affected the matter being kept, so the braine and the beginning of the sinewes are affected, that they leese their action; from whence ensueth the Palsey in that side: Then a maligne vapour being raised from hence, and passing to the beginning of the nerves of the sound part not altogether spoyled, the nerves are shaken, and so *Motus convulsivus* caused.

A naturall convulsion.

An unnaturall convulsion.

Motus convulsivus.

How this is caused.

If any man demand why a maligne vapour resting in the braine procureth only a stupiditie, but a convulsion if the beginning of the nerves be affected;

Quest.

I answer that this happeneth because no body can have motion in it selfe, which is not fibrous: Seeing then the braine is not fibrous, it cannot have extension and contraction: But the beginning of the nerves may although they be soft: for they are framed of many filaments covered with a membrane. Not unlike to this is *Spasmus flatulentus* or the crampe. This is caused of a thin humour or flatuositie nipping the beginning of the muscle: so you may observe that they which are troubled with a quartane ague, or increase

Answ.

Of the cramp.

windineſſe in the body, to be moſt ſubject to this griefe. This very often is a forerunner of a true convulſion: Wherefore it ſeemeth only to differ from a true convulſion, that in this the matter is leſſe ſharp, and the contraction endureth not ſo long.

A true convulſion. A true convulſion is that which is cauſed either of a plentifull groſſe matter ſtopping the ſinewes, or of a drineſſe purſing of them, or by conſent, a noyſome vapour being ſent to the beginning of the nerves of the muſcles, & nipping them.

Foure kindes of a true convulſion. Of a true convulſion there are foure kinds: *Emproſthotonos*, *apiſthotonos*, *tetanos*, and *Spaſmus cynicus*. Ἐμπροσθότονος, is when

Emproſthotonos. not only the neck, but the reſt of the body alſo is drawen forwards, ſo that the party cannot ſtand upright, the nerves of the neck, and of the reſt of the ſpina which move the body

Opiſthotonos. forward, being ill affected. Ὀπισθότονος, is when the whole body is bent backwards, ſo that it cannot be brought forward; which happeneth when the muſcles which bend the

Tetanos. body backward are hurt. Τέτανος, is when all the fore and back parts of the body are equally contracted, and ſo kept. This happeneth when all the aforeſaid muſcles are kept at a ſtay. In this kind of convulſion the body remaineth ſtiffe

Spaſmus cynicus. as a ſtake, ſo that it cannot bend it ſelfe to any part. Σπασμὸς κυνικὸς, *ſeu oris tortura, aut oris diſtortio*, according to *Celſus li. 4. c. 2.* when the mouth is pulled awry, is cauſed of the contraction of the muſcles of the face. Now the chiefe muſcles of the face are thoſe of the lower jaw, the noſtrils, lips, and cheekes, which have their ſinewes for the moſt part from the third conjugation.

The ſignes of a convulſion. As for the ſignes of a convulſion, it is eaſily diſcerned: for in it the nerves and muſcles being drawne towards their beginnings againſt the will, cauſe the member alſo which they move to follow this depraved motion, ſo that it continueth ſtiffe, and cannot be bent as the diſeaſed perſon will. This is the only pathognomonicall ſigne of a true convulſion. In a convulſive motion this diſtention is not performed at once, and ſo continueth; but it commeth and ceaſeth

ceaseth often, and shaketh the part sundry wayes.

The causes of a convulsion are three; fulnesse, inanition, and conient. — The causes of it.

Plethora or fulnesse is thus discerned: The habit of the body is thick and fleshy, the vessels appeare full, the pulse is strong, a constant age, the spring time, a temperat region, a full dyet of much nourishing meats, a ruddie colour of the skin, and if the party bleed little at the wound, shew the same: the sleepe is sound and long, dreames of red things and blood present themselves. In motion the body is not nimble, the urine is laudable, and plentifull. — Convulsion from fulnesse. The signes of it.

To cure such a convulsion, both Physicall and Chirurgicall meanes are required: As for the Physicall meanes, first, bleeding is necessarie: In phlebotomie, what quantity of blood is to be drawne, the strength of the party, the part affected, the age, the season of the yeare will shew, if no Physitian be at hand to direct. A slender dyet is also requisit: for little meat doth take away lassitude or heavinesse, and asswageth thirst, as it is noted 6. *Epidem. com.* 3. text 28. Purgation is not to be omitted: Begin first with clysters which must be reasonable strong, and have anodyne oyles mixed with them. Receive this as a patterne: ℞ *diacathol.* ℥i. *confect. Hamech* ℥ß. *spec. hier. pier.* ℥ij. *ol. lil. alb. & chamemel. an.* ℥i. *decoct. communis pro clysterib.* ℥x. *misc. ut fiat clyst.* If you be enforced to use cathartical meanes, use these two, the descriptions of which are these: 1. ℞ *cariocostin. & elect. de succo ros. an.* ℥iij. *syrup. ros. solut. cum agarico* ℥i. *aq. lil. convall. flor. titiæ, vel cerasor. nigror.* ℥iij. *Misc. ut fiat potio.* 2. ℞ *diaphæn. elect. de succo ros. & cariocostin. an.* ℥ij. *antidoti convulsivæ* ℥ij. *turpet. alb. & rad. e fal. major. an.* ℥ß. *diagryd.* ℥iij *castor.* ℈ij. *costi, zinzib. cariophyll. an.* ℥i. *semin. cumin. rut. croci an.* ℈i. *Cum syrup. ros. sol. cum agarico s. q. fiat elect. s. a. dos.* ℥ß. *in præcipit. aquarum* ℥iij. The composition of *Antidotus convulsiva* is this: ℞ *rad. pæon. maris conveniente tempore erutæ, & visci quercin. an.* ℥i. *castor.* ℥iij. *salv.* ℥v. *baccar. lauri. cranii humani an.* ℥i. *theriac. Andromach. & Mithridat. optimi an.* ℥vi. — A clyster. Purging medicaments. Description of the antidoti convulsiva.

Cum

Cum mellis deſpumati ℥xii. *fiat electuar. doſ.* 3ij. *in aq. ſalviæ, roriſmar. lavendul. aut aq. epilept. Langii. aut aqua hirundinum,*

Aqua hirundinum.

cujus hanc accipite deſcriptionem. ℞. *pullos hirund. numero* 50. *Forfice auferantur extremitates pennarum major. ſumin. ſeſel. card. benedict.* an. ℥ß. *calam. aromat. cyperian* 3ii. *ſol. majoran. rut.* an. *man.* ß. *flor. til. & lil. convall.* an. *pug.* ij. *viſc. quercin. rad. pæon luna decreſcente collect.* an. ℥i. *caſtor.* 3vi. *Infundantur iſta per dies* 3. *in vini Malvat. lib.* viij. *poſtea inſtituatur diſtillat. in* B. *Mariæ. doſ. ab.* ℥ß. *ad* ℥i. in *aq. prædictarum* ℥iij. Give alſo ℈ß. *extracti caſtorei in aq. ſalviæ electuarium ad ſpaſmum.* This following electuarie is excellent: ℞ *caſtor. ſagapen. opopanac.* an. 3i. *ſucci laſeris vel aſſæ fœtid.* 3i ß. *acori, ſcord.* an. 3ij. *trium piper. ſchœnanthi. carui.* an. 3ii. *aſari. ſcillæ aſſat.* an. 3i ß. *rad. irid. ſemin. apii. maſtich.* an. 3i. *ſtœchad.* 3iij. *cum mell. deſpumat. & mellis anthoſati* an. ℥v. *fiat electi. doſ.* 3i. *ſingulis diebus in aq. mulſa.*

Cardani praxis.

Cardanus de curat. admirand. c. 15. affirmeth that hee cured one troubled with *Opiſthotonos* thus: Hee cauſed him to refraine from fleſh, wine and egges: he applied to the neck, the whole ſpina, and parts convelled, clothes moyſtned in oyle of camomill and lilies. Inwardly hee miniſtred Mithridat with the electuarie of muske, with the which hee mingled pearls, the jacynth and emeraud prepared. Theſe things being done, wee are to come to the Topicall meanes; theſe muſt reſolve and diſcuſſe: ſuch are oyles, liniments, unguents, fomentations, bathes. *Utendum his oleis, vulpino, de caſtor. de catell. pinguibus, Philoſophor. juniper. laurino, rutaceo, terebinth. petrol. de ſpica, lumbric. hyper. cum gummis, de coſto. irino, lil. albor. chamomel. rutaceo. pingued. vulp. taxi, anſerum ſylveſt. humana, & urſina.* As for *unguents*, you have *Aregon, Marciatum, dialthæa cum gummis*: of theſe and the oyles, you may frame unto your ſelves Liniments: as ℞. *axung. human. ean. urſi. taxi, anſer. ſyls.* an. ℥i. *ung. dialth.* ℥ij. *ol. lumbric. vulpin. hyper. cum gummis. lil. alb. & caſtor.* an. 3i ß. *fiat linimentum ſ. a.* If great deſiccation and diſcuſſion be required, you may uſe this liniment: ℞. *ung. aregon. & Marciati* an. ℥i. *pingued. human. & urſin.* an. 3ij. *ol. terebinth. Philoſoph. & petrol.* an. 3i. *ol. ſalu.* 3i.

Topicall meanes.

Oyles.

Unguents.

Liniments.

As

As for Fomentations, boyle Mallowes, Fenugreek, *Scordium*, Sage, Lavender, Tanſey, Germander, Tyme, Camomil, Dill, Bay-leaves, the flowers of the white Lily, Woodbind, and Betony, in Sacke and Muſcadell, taking equall meaſure of each. Fomentations.

Bathes you may make alſo of theſe ſimples, boyling them in water and milke. Laſt of all, let the parts be lapped with Fox, wilde Cats, Conies, or Hares skins dreſſed. Bathes.

Having diſcourſed of a Convulſion proceeding from a *Plethora* or plenitude; I am to ſhew how a Convulſion from inanition is to be dealt with: whether it proceed from inanition or no, you are to examine thoſe ſignes which I ſet down to finde out a convulſion cauſed of fulneſſe. If you finde in the part wounded ſignes oppoſite and adverſe to thoſe, you may boldly pronounce that it doth proceed from inanition. Of a convulſion cauſed of inanition.

In ſuch a convulſion abſtaine from phlebotomie and purging; only keepe the body ſoluble with emollient clyſters, as this; ℞ *Lactis cui incoxerint althæa, violæ, parietaria, roſæ pallidæ, bonus henricus, mercurialis,* ℥x, *ol. viol. & lini an.* ℥j, *ſacchari rubri* ℥iij. *Miſc. ut fiat clyſter.* As for the locall medicaments, they muſt bee of a remollient and moyſtning qualitie. Of bleeding and purging.

The Oyles of this kinde are, The oyle of Violets, Linſeed, Quinces, Neats-foot and trotters, egges, of ſweet Almonds, new Sallat-oyle, you may uſe alſo May-butter, new ſwines greaſe tried: Of theſe you may make Liniments; take this deſcription as a patterne: ℞ *Butyri Maialis & axungiæ porcinæ recentis an.* ℥ij, *ol. ovor. cydon. & viol. an.* ℥ß. *Miſc. ut fiat linimentum.* Oyles. Liniments.

As for Bathes, you may boyle in milke and water a ſheeps head and feet, Mallow-leaves and flowers, Violet-leaves and flowers, Pellitory of the wall, Linſeed and Fenugreeke: when the Bath is made, you may adde to it ſome of Neats-feet oyle, and oyle of trotters. Bathes.

A convulſion by conſent.

Now laſt of all, a Convulſion by conſent doth offer it ſelfe: This may happen three manner of wayes:

1. From a maligne vapour.

Firſt, by a maligne vapour offending the beginning of the ſinewes, as it happeneth in poyſoned wounds. In theſe the wound is to be dilated, that the venomous matter may have a free vent. Then cupping glaſſes are to be applyed to ſtay the aſcent of the vapors.

The qualities of the medicaments.

The medicaments which are to be applyed to ſuch wounds muſt bee of a liquid ſubſtance, that they may the more readily paſſe to the bottome of the wound. They muſt alſo be of a drying and a digeſting quality, to reſolve and draw out the virulencie of the matter: ſuch are *Theriaca Andromachi*, and Mithridate diſſolved in the ſpirit of wine, or *aqua Theriacalis*. It is not amiſſe to adde ſome of the powder of Mercury precipitate well waſhed in Plantane, and red-roſe water: for in ſuch wounds it is an excellent antidot. Now I only point at the curation of ſuch wounds, ſetting downe but a few generall indications of curing, becauſe hereafter I am to diſcourſe of all ſorts of poyſoned wounds in particular.

2. From paine.

Secondly, a convulſion by ſympathie or conſent happeneth, the ſinewes drawing themſelves towards their beginnings, by reaſon of the great paine which is felt in the wounded part: In this kind of convulſion anodine medicaments, or ſuch as aſſwage paine, are to be applyed. But ſeeing I have at large diſcourſed of ſuch, Lect. 6. I will remit you thither, not willing to uſe idle repetitions.

3. From cold.

Thirdly, a convulſion by conſent may happen by reaſon of immoderate cold, making the ſinewes ſtiffe. In curing of this ſymptome, firſt you muſt keepe the wounded partie in a warme roome; ſecondly, you are to uſe warme medicaments, as oyle of Camomill, Dill, Rue, Bayes, Lilies, Rape oyle, dogs greaſe, beares greaſe, horſe greaſe. Of theſe you may frame unto your ſelves liniments, as this: ℞ *pingued. eanine, urſi, & equinæ an.* ℥ij, *ol. raporum, chamemelin. & rut. an.* ℥ß. *miſc. ut paretur linimentum.* In this caſe it is excellent to fo-

ment

ment the part with the decoction of Turneps being very warme; for it is a ſpecificall medicament in this caſe.

Before I end this Lecture, I will ſet downe a few Aphoriſmes concerning convulſions in wounds, which will ſerve for prognoſticks. Aphoriſmes concerning convulſions in wounds.

The firſt ſhall be this: A convulſion or raving, which enſueth after immoderate bleeding, is ill, according to *Hippocrates*, *Aphor.* 3. not only becauſe the ſinewes are dryed, but becauſe choler and corrupt humors offend the beginnings of the ſinewes after the evacuation of bloud. 1

Secondly, if a convulſion enſue after a wound, it is moſt common deadly, 5. *Aph.* 2. partly becauſe ſharpe humors nip the ſinewes, partly becauſe the ſinewes muſt bee enflamed. *Hurnius* writing upon this Aphoriſme, ſetteth downe a daintie medicament in this caſe, which I thought good to impart to you; and it is this: firſt, preſſe out the oyle out of the ſeeds of Saint *Iohns* woort: next infuſe the flowers of the herb in the ſame oyle: This oyle apply warme. 2

Thirdly, whoſoever are taken with a *Tetanos*, they dye within the ſpace of foure dayes; but if they paſſe theſe, they eſcape, 5. *Aphor.* 6. for firſt it is a moſt ſharpe diſeaſe, and ſuch doe end the fourth day: Secondly, nature cannot longer endure the horrible paine which is cauſed by the ſtrong tenſion of the ſinewes, both of the fore and backe part. One thing is to be noted, that they which dye of a convulſion, remaine long hot, becauſe they die being ſtifled, the muſcles appointed for reſpiration, being alſo convelled: for the muſcles of the necke being diſtended, the *ſeptum tranſverſum* alſo muſt ſuffer; for ſinewes ſpringing from the fourth *vertebra* of the necke are inſerted into the midriffe, and ſo the necke ſuffring a convulſion, reſpiration is hindered. 3 *Nota.*

LECT. XI.

Of a palsie, and cruditie in a wound.

HAving delivered unto you in my former Lecture so much as was fit for a Chirurgeon to know concerning a convulsion, the first proper symptome of a compound wound: now I am to descend to the second, which is a Palsie, a symptome opposite to the other. *Paralysis* is deduced from παραλύειν, which is to be resolved; because the sinew, and the muscle into which the sinew is inserted, are so resolved, loosened and weakned, that they become unfit instruments for voluntary motion: This particle παρὰ doth in this composition signifie a diminution; so that παραλυόμενοι may be termed such as are taken lame in one side, or any one part: but λυόμενοι and καταλυόμενοι, such as are taken thorow-out the whole body with such a griefe; such are persons taken with an Apoplexie, or are a dying: of the which *Hippocrates* speaketh, 2. *Aphor.* 47. It is called by *Avicen* and his interpreters *Mollificatio*, because the nerves in this griefe seeme to become softer. Νάρκη ἢ νάρκωσις, *torpor aut stupor*, numbnesse commeth neare unto this disease. And although this affection seemeth only to be a dulnesse in feeling, yet is taken for a passion compounded of the difficultie as well of moving as feeling. It is often a fore-runner of the palsey, and only differeth in the degree of the cause, it being milder. *Paralysis*, or a palsey, is the privation of motion alwayes, and sometimes of feeling also in one or more parts, proceeding from the stopping or intercluding of the animall spirits, which are the efficient causes of voluntary motion. By those who have written of this disease a question is moved:

Etymon.

Stupor.

Quest. How it commeth to passe that in a palsey, sometimes both moving and feeling are taken away; sometimes the motion and not the feeling, and sometimes the feeling and not the motion?

In

In thoſe parts wherein there are divers nerves ſerving for motion and feeling, the anſwer is eaſily made; for in ſuch parts if the nerves appointed for motion be onely affected, then the motion is hindered, the ſenſe remaining ſound, and if the nerves appointed for the ſenſe bee affected, the ſenſe is hindered, the motion remaining: So in the eye, if the optick nerves, the firſt paire bee hurt, the motory, the ſecond paire being ſafe, the ſight is taken away, the moving of the eye remaining; and in the tongue, if the third and fourth conjugation of nerves of the braine be offended, and the ſeventh part be ſound, the taſte is offended, the motion of the tongue continuing, and by the contrary. If the ſame nerve doe afford both moving and feeling unto a part, the matter is not ſo plaine. Authors doe aſcribe this to the defect of the animall ſpirits; ſo that moving may bee aboliſhed, feeling remaining: for fewer ſpirits are required for feeling, than motion, which muſt have greater ſtrength of the faculty; and therefore if feeling be aboliſhed, the motion cannot be ſafe: for it is not likely that the weaker operation being taken away, the ſtronger ſhould remaine. If a nerve inſerted into a muſcle be ſo affected, that the influence of the animall ſpirit is ſtayed, it may fall out that both feeling and moving may be taken away: but if a nerve being inſerted into a membraue, or into the skin, be ſo affected, the feeling may aboliſhed, the moving of the member remaining; for theſe ſimilary are not appointed for motion. *Anſw.*

The immediat cauſe of a palſey, I appoint to be ſome unnaturall affection of the ſinewes, which are inſerted into the parts, which are by nature deſtinate to voluntary motion: for from the ſinew every muſcle hath the faculty of moving, which carrieth to it the animall ſpirit. The immediat cauſe of a palſey.

Now a nerve hath a twofold conſideration; for it may bee conſidered, firſt, as it is a ſimilary part concurring to the compoſition of a muſcle; or as it is an organicall part carrying the animal ſpirit from the braine to it, which is the principall efficient cauſe of motion. How a nerve is to be conſidered.

The distemperature of a nerve.

As it is a similary part, it may suffer distemperature: This distemperature all practicers agree to be a cold and moist distemperature; for such a distemperature doth relax the nerve, and maketh it altogether unapt to receive and carry the animall spirit.

The externall causes.

Historia.

The externall causes of this distemperature may bee the cold ayre, the north wind, immoderat *Venus*, narcoticall medicaments, lying in snow, or in water. *Galen.* 4. *de loc. affectis*, *c.* 4. affirmeth, that one who in the winter season, in cold and rainy weather, had lapped his necke with a wet cloake, and kept it so somewhat too long, became paralyticke in one hand, the sinewes of the fifth, sixth, and seventh *vertebra* of the necke having beene offended.

The internall cause.

The internall cause which bringeth a palsey, is a phlegmaticke, moist and cold humour; moistning and cooling the nerves too much, and relaxing them, and so altering their naturall temperature, and making them unfit either to receive the influence of the animall spirit, or to bring it to the parts ordained for motion. If the nerves of the *spinalis medulla* bee so altered, it is to bee thought that the humor primitively doth fall from the braine; for the *spinalis medulla* is nothing else but a prolongation of the braine. So we see that an apoplexie which killeth not, endeth in a palsey of one side, the humor being turned downe from the head to the cavitie of the *vertebra* of the *spina*, wherein the *spinalis medulla* is contained, and moistning the sinews which proceed from thence. Neither is it to be denied that the marrow of the backe hath two parts, as the braine it selfe, from whence it proceedeth, to wit, the right and the left, and that one side may be affected, the other remaining sound. This humor doth primarily affect the sinewes, and secondarily the muscles.

Why wine doth readily engender this humour.

Nothing doth more promptly procreat this humor, than frequent ebrietie, chiefly if it bee procured by wine. One *Ralph Featherstone*, an Atturney at Law, by once being drunke with wine, the second day afterward became paralyticke in his right side, and so continued as long as life did last. *Rondeletius*

dektius thinketh wine to produce this effect, becauſe it is hot, and of ſubtill parts, and ſo is able to diſſolve ſuch humours, and to bring them to the nerves: *Rudius* thinketh this to come to paſſe becauſe the wine becommeth ſharp and eager in the ſinewes. *Platerus* is of this opinion, that wine hath a narcoticall faculty in it, and *Fernel. li. 5. de part. morb. & ſymptom. cap.* 8. affirmeth that he ſaw one whoſe whole skin became ſtupid by drinking drunke with wine, and ſleeping long. In the ſcurvy the limmes become laſie, becauſe the ſinewes and muſcles are too much moyſtned with the thin and wateriſh humour.

How a nerve being affected as an organicall part may be the cauſe of a palſey.

Now if you conſider a nerve as an organicall part, appointed for the carrying of the animall ſpirits to the muſcles, the inſtrument of voluntary motion, it may be the cauſe of a palſey, if it become thicker and narrower, and ſo unapt to receive the animall ſpirit.

1 Narrowneſſe by obſtruction.

This narrowneſſe may bee induced three manner of wayes: By Obſtruction, Compreſſion, Denſation, and Solution of continuity.

By Obſtruction it may come to paſſe, when as by a thick and a tough humour the ſinew is ſo ſtopt, that the animall ſpirits cannot paſſe.

2 By compreſſion.

The cauſes of a Compreſſion of the nerve are ſundry. Firſt, from humours bearing down the nerve. Secondly, from a tumour doing the like. Thirdly, from a contuſion. Fourthly, from a laxation, yet if this laxation be not ſuddainly performed, but by degrees, it bringeth not a palſey, as wee may ſee in thoſe who are crooke backed. Fifthly, from a ſtrait ligature. Sixthly, too long leaning upon a part, as when wee ſleepe leaning our head upon the palme of our hand. Seventhly, cold may bee the cauſe, for if it be able to bring a mortification of a part, it may more eaſily cauſe an infirmitie or weakneſſe of the ſame.

3 By denſation.

Denſation or thickning may be procured by two meanes: Firſt, if the party hath beene nouriſhed by thick and ſlimy meats: Secondly, if immoderat cold hath congealed it.

Laſt-

4 Laſt of all, a palſey may bee cauſed by ſolution of unity, when the nerve which bringeth the animall ſpirit to the part is either cut tranſverſly, or torne, or eroded with a ſharp humour.

By ſolution of unity.

The ſignes of a palſey.

The ſignes of a palſey are manifeſt, to wit, the privation of moving, and ſometimes of feeling alſo.

The part primarily affected is not ſo eaſily found out: But that you attaine to this receive theſe aphoriſmes.

1 1. If one ſide of the face bee affected, and the ſpeech hindered as well as one ſide of the body, both the braine and the *ſpinalis medulla* are affected.

2 2. If onely one ſide of the face be troubled, the reſt of the body being untouched, the cauſe is onely in the braine.

3 3. If all the parts of the head being ſound, either of the ſides bee paralytick, the cauſe is in one of the ſides of the *Spinalis medulla*.

4 4. If the armes only be paralytick, the cauſe is in the fifth, ſixth, and ſeventh *vertebra* of the neck.

5 5. If the diſeaſe bee onely reſident in the legs, then you are to conjecture that the cauſe is in the *vertebræ* of the loynes and *os ſacrum*.

6 6. If any ſeverall part bee paralytik, then the cauſe is not in the braine, or the *ſpinalis medulla*, but in the ſprig of ſome nerve inſerted in that part.

The kinds of it.

As for the differences of a palſey; it is either univerſall, when all the parts under the head are ſeized upon; or of one ſide onely, and then it is called *Hemiphlegia*.

The prognoſticks.

As for the prognoſticks receive theſe.

1 1. If a palſey happen becauſe the nerve is tranſverſly cut aſunder, it is incurable; *Hippoc. 6. aphor. 19.*

2 2. Every ſtrong palſey proceeding from an inward cauſe is hard to be cured, becauſe it is cauſed of a groſſe, cold, and viſcous humour, which hardly can be removed.

3 3. A palſey taking an old perſon in the winter, is hardly cured, becauſe diſeaſes in the winter are more rebellious, and the naturall heat in ſuch perſons is weake.

4. A

4. A palſie which followeth after an apoplexy is hardly cured, becauſe the cauſe is vehement, the parts are weake, and there is ſtill a feare of relaps.

5. A palſey wherein both motion and feeling are taken away, is more dangerous, than that wherein one only of theſe ſymptomes happen. 5

6. A palſey enſuing after a ſtrong and ſuddaine luxation of the *vertebræ* of the *ſpina* is dangerous; becauſe the nerves are much bruſed: and by reaſon of the inflammation following they hardly can be reduced. 6

7. A trembling after a palſie is good: for it ſheweth that the paſſage of the nerves by the which the animall ſpirit doth paſſe is ſomewhat pervious. 7

8. If the paralytick members be actually hot, there is ſome hope of curing. 8

9. If the paralytick member be extenuat, and the freſh colour thereof be changed, it can hardly be cured, becauſe the ſpirits muſt be few, and the naturall heat weake. 9

10. If the eye of the paralytick ſide be weake, the diſeaſe is incurable: for this argueth the defect of the naturall heat, and of the animall ſpirits. 10

11. A fever following after a palſie doth give good hope of curation, becauſe it warmeth, dryeth and diſcuſſeth the matter. 11

12. A flux of the belly happening by the benefit of nature may further the curation of the palſie; it diſcharging the ſinewes of the matter impacted. 12

Rhaſ. 1. contin.

In the curation of a palſey, you muſt ſet down a convenient diet: It muſt be ſuch as dryeth and warmeth the body: The decoction of guajack is good, uſed in ſtead of ordinarie drink, for it doth digeſt and diſcuſſe the materiall cauſe: If the party like not this drink, let a bag be hung in good beere or ale ſtuffed with herbes, which ſtrengthen the ſinews, as cowſlip-flowers, *chamæpytis*, ſage, roſemary, *ſtechas*, betony, hypericon, calamint, the leſſer centory, nutmegs, cloaves, cinamome and *calamus aromaticus*. Metheglin and meath may

The Curation.

be permitted. Wine is not convenient, for according to all Autors, it is offensive to the sinewes: let the bread be biscuit: the flesh of partridges, pheasants, chickens, pigeons, and of other mountaine birds rosted, is good, sauce being made with cloaves and cinamom.

Phlebotomy. Phlebotomy hath heere no place, becaus paralytick persons are most commonly cold and flegmatick: and becaus they are subject to costiveness, clisters are to bee ministred: In this case then dissolve *diaphœnicum, benedicta laxativa*, or *hieradia colocynthidos*, in the decoction of sage, sweet marjorom, hyssop, calaminth, the lesser centory, bay-berries, cumin seeds, the flowers of stechas, melilot and camomill. It is expedient that the paralytick bee purged sometimes; but first you are to prepare the matter by ministring the syrups of *stechas, de 5. radicibus, de Bizantiis, de hyssopo*, with the decoction of *heonie, ruscus, asparagus, iris*, betony, sage, savory, peny-royall, *chamæpytis*, the flowers of sage, rosemary, and cowslips, aromatized with nutmegs, cloves and cinamom. Then purge with *pilulæ de hiera, de agarico, assaereth, elephanginæ, mastichinæ*. If you would use stronger, give *pilulæ coccieæ*, and *fœtidæ*, and *extractum panchimagogon*. If the diseased party require potions, minister *diaphœnicum, diacarthamum, hieradiacolocynth. cum agarico trochiscato*. Inwardly to strengthen the party give the conserves of rosemary flowers, sage flowers, betony flowers, cowslip flowers, peony flowers, and the cloave gillover, nutmegs preserved, ginger preserved, *diambræ, mithridat*. Of these you may frame electuaries, adding the syrup of *stechas*.

Clysters.

Purging.

The locall meanes. 1 Frictions, 2 Ventoses. As for the locall medicaments, ever rub the affected part with warme clothes; but gently, lest the spirits which are attracted bee dissipat. Secondly, apply ventoses to the head of the muscle of the affected part, but let it be but narrow, and stay but a litle while. Thirdly, apply an emplaster of pitch and rosin of the pine-tree. Fourthly, touch the stupid parts with quick nettles. Fifthly, rubifying medicaments may be applyed to attract the spirits. Sixthly, fomentations of the

nervall

nervall herbes above ſpecified may bee uſed. Seventhly, you may embrocat the part with theſe oyles following, *ol. vulp. lumbric. chamemel. lil. alb. rut. de euphor. caſtor. ſpica, oleo juniper. ceræ, ſuccin. ſalv. roriſm. thymi, lavendul. cariophyll. chymico. ol. de lateribus ſynapi per expreſſionem factum.* Eighthly, apply *unguentum Marciatum, Aregon, Agrippæ*; then apply the ſpice, emplaſter, or any one of that faculty. Laſt of all, lap the member in hot furres. Many commend the holding of the paralytick member for the ſpace of an houre every morning, for the ſpace of 16 dayes, in the huskes of the grapes, left after the wine is preſſed out, in the harveſt time. They in this countrey uſe in ſtead of theſe, warme graines, and oxes bellies newly killed. Naturall ſulphureous, and bituminous baths are excellent in this caſe: This countrey ought much to exalt the benignity and bountifulneſſe of God, who hath furniſhed it with the warers of the city of the Bath profitable in this and other griefes. Bathes.

Of crudity in wounds.

The ſecond thing which doth hinder the unition of a wound, and maketh it compound, I affirmed to be crudity in a wound. A crude wound I call that which doth not afford laudable quittour, which muſt bee white, ſmooth and uniforme: This happeneth by ſix meanes. Firſt, by reaſon of a continuall flux of blood. Secondly, by an inſtrument bruſing, as in wounds made by gun-ſhot. Thirdly, by reaſon of the nature of the part, ſuch as deep wounds in the joynts. Fourthly, by reaſon of the coldneſſe of the aire. Fifthly, by the application of unfit medicaments, as cold water, bole, &c. Sixthly, by reaſon of too ſtrait binding. How blood is to bee ſtayed I have declared in the ſecond Lecture of this ſubject. Contuſed wounds are to bee digeſted, medicaments drying without mordication are to bee applyed to the joynts, to preſerve the temperature of them: The aire is to bee corrected, fit medicaments are to bee applyed to the wounded part; & a meane deligation neither too ſtrait, nor too ſlacke,

is to be uſed: Of all which ſeeing I have already diſcourſed amply, I will repeat nothing.

Of a Diſeaſe complicat with a wound.

The laſt thing which maketh a wound compound is a griefe complicat with the wound, as the dropſie, french pox, and leproſie; But ſeeing they belong to the practice of Phyſick, I will leave them to thoſe who have written, and liſt to write of that ſubject, leſt I may ſeeme to reap the corne of another mans field.

LECT. XII.

Of a wound made by a poyſoned weapon.

HItherto I have delivered unto you the intentions which ſerve for the curation of mild compound wounds. Now am I to acquaint you with the meanes by the which maligne compound wounds are to bee cured. Such wounds are commonly termed poyſoned wounds: but before I deſcend to the handling of the particular differences of them, it will not be amiſſe to ſpeake of poyſon and poyſonable diſeaſes in generall: for this will make way to the better underſtanding of the particulars.

The denominations of poyſon.

Venenum is nothing elſe but *Medicamentum mortale*, a deadly medicament. The Greeke Autors call it φάρμακον *Hippoc. 6. Epidem. Com. 6. text. vocat* κακόεργον, *maleficium*, a miſchievous medicament. In his oath he called it θανάσιμον, deadly: *Theophraſtus, Dioſcorides*, and *Galen* call it ſometimes φάρμακον φθορικὸν, *modo* θανάσιμον, *modo* διαπτήσιον, *corruptorium*, or *ketale*. *Ariſtot. 1 probl. 46.* calleth poyſons φάρμακα θανατηφόρα, medicaments which procure death. It may be thus deſcribed.

The deſcription of it.

Venenum or a poyſon is a compound ſubſtance, not naturall,

rall, adverse to the heart, and which corrupteth the nature of man. In this description it is called a substance, and so it is: for contraries are contained in this same *prædicament*: Now seeing *alimentum* or a nourishment is in the *prædicament* of *substantiæ*, *venenum* or a poyson must be in the same, seeing it is contrary to nourishment: for this maintaineth the nature of man, the other destroyeth the same. *Galen* 3. *de temper.* 4. assigneth this difference betweene these two, that *alimentum* is that which is overcome by nature, and turned into its substance; but *venenum* or a poyson is that which overcommeth Nature, and destroyeth it. In the description it is said to be a compound substance: for seeing according to this Philosophicall *axiom. actiones sunt compositorum*, actions are produced by things compounded; a poyson must be a thing compound, seeing the actions of it are manifest. It is a folly to thinke that a poyson is only an accident, for an accident may either be in the subject, whereof it is an accident, or absent from it without the destruction of it, which cannot bee affirmed of a poyson; for being ministred it killeth the party, unlesse it be hindered by Antidotes. One may thinke that the poyson by biting of a mad dogge, or by the stinging of a Scorpion, are qualities, rather than substances: but in truth they are compound substances, although the body seeme small, and scarce to bee discerned by our senses. *Galen. 6. de Loc. affect. cap.* 5. seemeth to intimat so much to us, when he saith, that the poyson of a Scorpion is most forcible in efficacy, although it be but small in quantity.

In the description, a poyson is said to bee a substance not naturall, or preter-naturall; for things naturall are alwayes good; but things called preter-naturall are alwayes of their own nature ill, as diseases and the causes of them. Poyson is said to be adverse to the heart; for it aimes chiefly at the heart, for as soone as one hath either taken poyson inwardly, or is outwardly touched with it, hee presently is taken with the palpitation of the heart, the weakenesse of the same, & last of all swooning & fainting. In this they differ from purgative

medicaments, becauſe theſe only offend the ſtomack: wherefore their correctives ought ſtill to bee mingled with them. Laſt of all in the deſcription of a poiſon, it is ſaid to corrupt the nature of man; for whether nature according to *Ariſtotle* 2. *Phyſic.* be taken for the matter, forme, or the whole frame of man, it corrupteth all. The materials of the body of man are the humors, the ſpirits, and the ſolid parts: that theſe are corrupted by poyſon, no man doubteth. If in a man you take the forme to be the temperament, or whatſoever different from the temperament, it is overthrowne in like manner by poyſon.

Laſt of all, a man by poyſon being deprived of life, becommeth a *cadaver*, or a dead carcaſe.

Dub. But here a doubt ariſeth, to wit, how it commeth to paſſe that ſome are not hurt by poyſon.

Sol. Sundry reaſons may be alleaged for this. The firſt is the propriety of ſome particular perſons; for ſome have obtained ſuch a conſtitution from nature, that hardly any thing can hurt them. *Sextus Empyricus*, 1. *hypotheſeon empyricarum* writeth, that there was an old woman, who without receiving any harme, could take ℥xxx. of Hemlocke at one time; and that there was one *Lyſides*, who would eat halfe an ounce of *Opium* ſafely; *Athenagoras* was not hurt by Scorpions. The blacke Moores, who dwell by the River *Hydaſpis*, are ſaid to feed upon Scorpions and Serpents, without taking any harme; which falleth out by reaſon of a ſtrange and hid conſtitution of the body.

The ſecond reaſon may be the preparation of the body by antidots: So *Mithridates*, King of *Pontus*, could not be poyſoned, becauſe he armed himſelfe againſt poyſon, by often taking the Mithridaticall confection.

The third reaſon may be the taking of ſlimie or fat meats, or drinkes, before the taking of the poyſon, for theſe are apt to keepe in poyſons, and to abate much of their ſtrength.

The fourth reaſon may be the vomiting of the poyſon before it could take hold.

The

The laſt reaſon may be the ſmall quantitie of the poyſon; for *Galen.* 3. *de Simpl. medicam. cap.* 23. writeth that all medicaments, whether they be deadly or purgative, require a certaine meaſure for the effecting of their operations. Wee are to conſider alſo why ſome poyſons kill preſently, ſome ſlowly.

Why ſome poiſons kill preſently, ſome ſlowly.

The firſt cauſe is the ſtrength of the poyſon it ſelfe. *Nicolaus Florentinus, ſerm.* 4. *tract.* 3. *ſumma* 2. *c.* 9. *& tract.* 4. *c.* 6. doth write that one *Franciſcus Ordelaphus*, a Captaine, had a certaine kinde of poyſon, which if it had beene caſt upon burning coles, preſently did kill all the ſtanders by.

The ſecond reaſon is the diſpoſition of the bodies; for they who have but a weake heart, are more eaſily killed by poyſon. They in like manner who have hot bodies are ſooneſt offended by poyſon, for they have wide and large paſſages, and ſo the poyſon more promptly paſſeth to the heart.

The third reaſon may be the quantitie of the poyſon miniſtred, for a great quantitie ſooner diſpatcheth than a ſmall.

The fourth reaſon may be the time when they are gathered: *Theophraſt. l.* 9. *de hiſt. plant. c.* 15. writeth that poiſons gathered in the ſummer time, are ſtronger than thoſe which are gathered in the ſpring time.

The fifth reaſon may be the taking of a poyſon faſting, for then it killeth ſooner, than when the body is full.

The laſt reaſon may bee the compoſition of the poyſon: All the medicaments ſet downe in the diſpenſatories ſhew how requiſite the manner of compoſition is; ſo *Theophraſt.* in the aforeſaid booke and *c.* 17. rejecting the compoſition of the Hemlocke, which the inhabitants of the Iland *Chios* uſed for poyſoning, ſetteth downe a more ſure and quicke way.

There is a queſtion moved by thoſe who have written of poyſons, whether a poyſon may be made, which not ſuddenly

Whether poyſons may bee made to kil at determinate times.

ly, but ſlowly, and at a determinate time may kill, as within the ſpace of a moneth, or a quarter of a yeare, or a whole yeare. Some are of the opinion that ſuch a poyſon may bee compoſed: as *Theophraſtus lib. 9. de hiſt. plant. cap. de aconito:* who writeth that it was wont ſo to be prepared, that it was able to kill within the ſpace of a moneth, ſometimes within the ſpace of two or three moneths; yea, after a yeare expired.

Anſw. For the determination of this queſtion, it cannot be doubted but that a poyſon may be ſo prepared, that it may either ſooner, or more ſlowly kill; but that it may kill at a determinate time, it ſeemeth altogether abſurd: for actions which are produced at a determinate time, proceed from a facultie which worketh by diſcourſe and judgement: But who can affirme that there is any ſuch faculty in poyſons? Secondly, ſeeing poyſons are contrary to the nature of man, I ſee not how they can be contained any long ſpace of time within the body of man, not doing him any harme. Thirdly, it is more likely that a purgative medicament could be miniſtred to worke at a definite time, ſeeing it is more milde than a poyſon; but no ſuch medicament could ever hitherto bee found out. Onely then poyſons may bee dreſſed to kill more ſpeedily or ſlowly. This we may perceive in the biting of a mad dog, and in the French pox, which in ſome bodies ſhew their forces ſpeedily, in ſome ſlowly.

Queſt. It may be that you may aske by what meanes theſe poiſons and deleteries doe kill.

Anſw. I anſwer, that they neither kill by their exceſſive qualities, ſeeing we uſe medicaments hot in the fourth degree, as *Enphorbium*, and *Cantharides*; neither by their temperature reſulting from a certaine mixture of the elements; but they worke by a more hidden and ſecret forme, and by a certaine nature or forme infuſed after the temperature, which is not knowne unto us by the conſtitutive cauſes, but by the effects, as many other things are [a]. This nature (whatſoever Philoſophers

[a] *Baſil. Magn. hom. 5. in Exod.*

ſophers ſay) they had from the creation, and not from the ſtarres, or any new celeſtiall influence, as *Petrus Aponenſis lib. de venenis* ſurmiſeth.

If you demand what things in man they chiefly aſſault; *Queſt.*

I reply, that thoſe things are chiefly the naturall heat, and the radicall moiſture; for they extinguiſh the firſt, and corrupt the ſecond. One then would thinke it a ſtrange thing that the naturall heat of the body of man ſhould ſtirre up this proprietie of poyſons, its profeſſed enemie, to quench it ſelfe. But nature hath ordained that the naturall heat muſt goe about the elaborating of every thing which entereth into the body of man, to finde how it may be made profitable for preſervation of the life of man. Wherefore it finding poyſon, goeth about to digeſt it, not by the intention of nature, but by the neceſſitie of its action, for it cannot be idle. *Anſw.*

Now the ſubjects wherein this deletery propertie is lodged, are three: a vapor, a juyce or humor, or a terreſtriall ſubſtance: for whatſoever poyſons are taken either from plants or minerals, or living creatures, they are reſident in one of theſe three ſubſtances. The ſubjects of poyſons.

Now as for the divers kindes of poyſons; ſome are artificiall, ſome naturall: If I could ſhew the innumerable differences of both the kinds, I would not: for it were a hainous crime to further the wicked intentions of ſome malicious perſons of this deſperate age, in this buſineſſe. The divers kinds of poyſons.

One may wonder why God and nature have ordained and brought forth poyſons. This wonder wee may eaſily qualifie, if we ſay that poyſons may be conſidered two manner of wayes: Why poyſons were created.

Firſt, as they are naturall bodies, and ſo they concurre to the conſtitution of the world, and they have good uſes. Firſt, they are requiſite in ſome crafts or trades, eſpecially in Painting and Dying. Secondly, they are appointed for the feeding of ſome creatures: ſo Stares feed upon the Hemlocke, *Baſil. loco citato.*

Swallowes upon the *Cantharides*, the Quailes upon Ellebore Thirdly, they ſerve for the curing of ſome diſeaſes in man; ſo Ellebore cureth madneſſe, the Libbards bane the ſtinging of the Scorpion; Cakes made of Arſenicke are uſed in the plague time.

Secondly, poyſons may be conſidered as they are adverſe to our bodies, and deadly, and ſo they have no uſe; but are abuſed by perverſe and wicked perſons: So innumerable ſorts of weapons are made of iron and ſteele, deviſed by the wit of man, furthered by the Devill, the enemie of mankind, for the killing and diſpatching of man.

The ſignes of poyſon.

As for the ſignes of poyſon, *Galen. 6. de loc. affect. c. 5.* expreſſeth them briefly in theſe words: when a man having ſufficient ſtore of good humors, and living healthfully, dieth ſuddenly, (as it falleth out when one hath taken a deadly poyſon,) and that afterward his body become of a livid colour, or blacke, or ſpotted, or that it runneth by reaſon of moyſture, or ſendeth out a noyſome ſmell, they ſay, that ſuch a man hath taken poyſon, and not without cauſe. *Mercurialis de morb. veneneſ. & venen. lib. 1. c. 16.* addeth theſe; fainting, a panting of the heart, filthy vomits, caſting of blacke blood, the hicket, trembling, ſtupiditie, retention of urine, a weake pulſe, burning in the whole body, a little before death coldneſſe, and caſting of cold ſubſtances, ſpots thorow-out all the skinne, puſtules, tumors, gnawing in the ſtomacke, gripling in the guts: Theſe are ſignes of poyſon taken within the body.

The Prognoſticks.

As for the Prognoſticks of poyſon, two ſhall ſuffice: Firſt, if the poyſon cannot be driven out of the body, either by vomit or ſiege, if remedies prevaile nothing, but that the ſymptomes continue, as if fainting continue, the whole bodie groweth cold, cold ſweats breake out, and the pulſe ceaſeth, and the whites of the eyes turne up, according to *Ariſtot. 4. Problem. 1.* there is no hope of eſcaping, and death it ſelfe approacheth. Secondly, if the poyſon be expelled by vomiting

or

or ſiege, if antidotes bring eaſe, and the Antidotes ceaſe, then there is hope that the poyſoned partie will eſcape.

Beſides theſe poyſons which doe kill, being inwardly taken, there are ſome which offending firſt the externall parts, by degrees paſſe from thence by the wayes of the arteries to the heart, and bring at laſt thoſe ſymptomes, whereof I have ſpoken, and death it ſelfe. There are two ſorts of theſe externall poyſons, which properly belong to the ſubject which we have in hand, to wit, wounds: which are ſolutions of unitie by a poyſoned weapon, and by the bitings and ſtingings of venomous beaſts. Of outward poyſons.

Wounds inflicted by poyſoned weapons, are thus diſcerned: Firſt, they cauſe unaccuſtomed and intolerable paine in the part wounded. Secondly, ſtrange tumors appeare. Thirdly, the part wounded doth become diſcoloured, of a livid, blacke, or ſpotted colour, the part notwithſtanding having not beene contuſed. Fourthly, the part putrifieth in progreſſe of time, and ſendeth out a ſtinking ſanious quittour. Fifthly, having paſſed from the affected part to the heart, thoſe fearfull ſymptomes which I have ſet downe doe enſue. Of wounds made by a poiſoned weapon.

As for the preſages, no wound made by a poyſoned weapon can be ſecure; for poyſon of it owne proper nature is ſo adverſe to the nature of man, that it ever threatneth deſtruction. Secondly, if after the uſing of methodicall and convenient meanes the ſignes begin to be abated, there is ſome hope of recovery left. The preſages.

If you would know which theſe meanes are, if the poyſon hath not paſſed further than the part wounded, if the partie be not of an eminent qualitie, tender or fearfull, it is good to uſe the actuall cautery, for it doth much ſtay the activitie of the poiſon. But that the eſchar may ſpeedily fal, you are to uſe deepe ſcarifications, which muſt reach to the ſound part: Then you are to uſe the medicaments, which are fit to procure the fall of the eſchare, that the poyſon may have vent to iſſue out. If the poyſon hath paſſed deeply into the bo- The curing of ſuch wounds.

die, beware of uſing of the actuall cautery; for this were to adde griefe to griefe. If the party bee tender and fearfull, uſe ventoſes after ſcarification. To the part uſe convenient medicaments, ſuch as *Unguentum de pæto* is, or the *Baſilicum* deſcribed by me: But with theſe you muſt alwayes mingle Mercury precipitate, or Turbit minerall waſhed, with ſome *Theriaca Andromachi*, or Mithridate, or *Antidotum de ſanguinibus*, or *Athanaſia*, or *Electuarium de ovo*. To the parts adjacent, apply attractive emplaſters, as *Oxycroceum*, and ſuch as receive the hot gummes, as *Galbanum*, *Opopanax elemni*, *&c.* This doe unleſſe the wounded part be ſo hot that it threatneth a gangren, for then you muſt goe about to meet with this ſymptome, leaving the curation of the griefe for a while.

Topickes.

In theſe wounds, untill three dayes be expired, you are to refraine from bleeding, purging, vomiting and clyſters: The partie muſt ſleepe ſparingly, and uſe a moderate dyet, eating ſuch meats as are of eaſie digeſtion, and afford a good juyce. During this time, you are to miniſter every day, morning and evening, one of the Electuaries afore-named, giving a dram or more, according to the perſon of the partie in ſome convenient liquor, as *Carduus* water, Strawberry water, or blacke-cherry water, adding ſome *aqua theriacalis*.

LECT. XIII.

Of a wound by the biting of a mad dog.

IN my former Lecture, having firſt diſcourſed of poyſon in generall, I ſet downe the method of curing of ſuch wounds as are made by a poyſoned weapon. Now am I therefore to deſcend to the other branch of maligne compound wounds, which are procured by the biting or ſtinging of venomous beaſts: of theſe there are two ſorts; the biting of a madde dogge, and the biting or ſtinging of ſerpents.

A wound by a madde dogge.

I will then firſt begin with a wound cauſed by a mad dog, becauſe

becauſe it moſt frequently happeneth in theſe parts, and Phyſitians and Chirurgeons are moſt often imployed about the curing of this kinde of wound. And although other beaſts beſides dogs may bee madde, as wolves, foxes, cats, horſes, and ſundry other, and by biting kill a man; yet by moſt who have written of this ſubject, this kinde of poyſon hath its denomination from the dog, becauſe he of all other beaſts moſt frequently doth run madde. This poyſon, which is the cauſe of the madneſſe, doth not conſiſt in the firſt qualities heat or cold, moiſture or drineſſe; for dogs and wolves run madde, as well in extreme cold weather, in the middle of winter, as in the ſummer in the Dog-dayes.

The poyſon of a madde dog.

Wherfore it muſt be a ſpecifical kind of poiſon which moſt frequently is engendered in a dog by a peculiar property, and inclination to this kinde of madneſſe, and to communicate it to other living creatures. *Baccius in tract. de venen.* writeth that he ſaw a man killed by a mad houſe Cocke.

How this poyſon is communicate.

This poyſon is communicat two manner of wayes: Firſt, by biting and the ſlaver: Secondly, by ſlaver without biting: This ſlaver is eaſily imparted by kiſſing any madde beaſt; for the skin of the lips of man are very thin and tender, and ſo apt to admit this kinde of poyſon; yea, ſometimes this poiſon is received by the thicke skin of any part. *Matth. de gradib. conſil.* 82. affirmeth one named *Ioannes Coquinarius*, by putting his hand in a madde dogs mouth, after many dayes to have become madde.

How long this poyſon may lye lurking in the body.

After that this poyſon is received, ſome ſooner, ſome more ſlowly become mad; for ſome rage within the ſpace of a few dayes, or a weeke; ſome a long time after. *Braſſivol. lib. 2. Aphor. comment.* 23. writeth, that in ſome this poyſon hath lurked ſeventeene yeares. *Guainerius in tract. de venen. c.* 12. proteſteth that he heard of one of credit, that one was taken with madneſſe the eighteenth yeare after the poyſon was received; yea, *Alzaharavius* affirmeth that he found by experience this poyſon to have lyen lurking in the body fortie yeares.

Why it may be ſo.

The reaſons which may induce us to beleeve this to bee true are ſundry: Firſt, the varietie of the parts offended: As for example: If a nerve, veine, or arterie be hurt, the poyſon may more promptly be communicate by theſe conduicts to the noble parts from whence they ſpring, than by other parts ignobler which have no ſuch conſent with them. The ſecond is the nature of the poyſon it ſelfe, which ſometimes is ſtronger, ſometimes weaker, and ſo more or leſſe active. The third is the weakneſſe or ſtrength of the party touched or bitten: and ſo if ſundry perſons about the ſame time be bitten by the ſame dogge or woolfe, neither doe they all ſuſtaine the like harme, neither doe the ſymptomes appeare about the ſame time in all, becauſe the bodies of ſome are ſtronger, and of ſome weaker to reſiſt the poyſon. The fourth is, becauſe the poyſon is more fierce in one beaſt, than in another: and ſo two being bitten by two ſeverall dogges, the one may ſooner dye than the other, by reaſon of the vehemencie of the poyſon. Fifthly, the ſeaſon of the yeare, and the conſtitution of the climat may much further, or hinder the ſymptomes: And ſo the poyſon of ſerpents in hot countries, and in the ſummer time is moſt fierce. Sixthly and laſtly, the dyet of the diſeaſed party may much further or hinder the appearing of the ſymptomes: for if he uſe a dyet which doth abate the force of the poyſon, they muſt of a neceſſitie appeare more ſlowly.

The ſignes of a mad dogge.

That the dogge that bit is mad, you ſhall know by theſe ſignes. A mad dogge doth refuſe both food and drinke; much ſlaver iſſueth out of his mouth and noſthrils: Hee looketh wild: his eyes are red and firie: He barketh but a little, and that hoarſly: Hee becommeth leane: Hee carrieth his taile under his belly; he hangeth out his tongue out of his mouth, which appeareth either yellow, as if it were dyed, with choler, or blackiſh, or redish: other dogges ſhun them: ſometimes they run mainly, ſometimes they ſtand ſtill: in running oftentimes they ſtrick againſt trees or blocks:

blocks : Hee knoweth not his owner, but runneth fiercely upon all indifferently.

How wee may know by the wound whether the dogge was mad.

If wee cannot have the dogge to examine whether he be mad or no, authors have ſet downe ſome meanes to find this out by the wound it ſelfe. The firſt is, wee are to beat ſome walnuts, and to apply them to the wound, and to ſuffer them to lie to it for a nights ſpace : when they are taken away, they are to be given to a cock or a hen. If the dogge hath not beene mad, they ſhall live ; but if he was mad, they ſhall dye the day after. Secondly, others lay wheat to the wound : others draw blood and quittour from the wound, and adding to it flower make a paſte, which they give to a hen. If the dogge was mad, the hen dieth. Thirdly, *Avicen* and *Rhoſis* will us to rub the wound with the crumme of a loafe, that it may imbibe the blood and quittour of the wound, and to offer it to a dogge ; if the dogge refuſe to eat it, or to ſmell unto it, and if after eating of it he become mad or die, it is likely that the dog was mad.

How wee may know whether the party bitten is like to become mad.

Having ſet downe the meanes by the which wee may find out whether a dogge which hath bitten a perſon was mad ; it is requiſit alſo that I ſet downe the ſignes, by the which you may find out, whether the party bitten is like to be mad.

Signes of madneſſe beginning.

The ſignes of madneſſe beginning are theſe : The party becommeth diſcontented and angry without any juſt cauſe ; hee feeleth a gnawing, and heavineſſe in the ſtomach : He complaineth of unſeaſonable weather although it be faire, his body becommeth heavy and lumpiſh : He is given to watching ; and if he doe ſleepe, his ſleepe is troubleſome. Hee feareth without cauſe : Hee drinketh leſſe than he was wont : Hee beginneth to murmure, and to ſpeake to himſelfe : He deſireth candell light by day : In the part wounded although skinned a paine will be felt, which mounteth up towards the head : whither when it is come, a giddineſſe is cauſed, that the party cannot walke ſteadily forward. When theſe laſt ſignes appeare, be aſſured that madneſſe is at hand.

Theſe

Signes of madneſſe confirmed.

Theſe are the ſignes of madneſſe confirmed : the face and body become red : the party becommeth troubleſome ; hee foameth at the mouth : He hath a wild looke : He ſpitteth upon thoſe which ſtand by : Amongſt ſuch perſons ſome doe barke like dogges, and offer to bite : It is common to all thoſe who become mad by the biting of a mad dogge, to hate water, and all liquid things : The true cauſe of this, is the antipathie betweene this poyſon and liquid things : for by ſuch things it becommeth more fierce, and the diſeaſed parties are more offended. The pulſes of ſuch are ſmall and inordinate : Their members become more and more lumpiſh ; they become coſtive : The urine commeth away by dropping : their voyce becommeth hoarſe : they are troubled with difficulty of breathing ; they put out their tongue ; when the griefe increaſeth, they vomit either yellow or black choler : A day or two before they die, ſome of them are troubled with the hicket, and a little before death with convulſions, and a fearefull gnaſhing of the teeth.

The prognoſticks.

As for the prognoſticks of ſuch wounds, receive theſe : Firſt, if the wound be not deepe, and hath not offended a nerve, veine, or arterie, there is great hope that it may be cured, if art be uſed. Secondly, if the party bitten become mad and feare water, there is ſmall or rather no hope of his recovery.

The curative intentions.

As for the curation, the Chirurgeon is to ſet three intentions before his eyes : Firſt, that he labour by all meanes to draw the poyſon out of the wound, that it goe not deeper into the body. Secondly, the principall parts are to bee ſtrengthened, that they may the better withſtand and repell the poyſon. The third is, that he labour to overcome the malignity of the poyſon.

How the poyſon is to be drawne out.

The firſt he ſhall attaine unto, if firſt he apply a legature three or foure inches above the wound ; yet *Celſus li. 5. c. 27.* will not have this ligature to be too ſtrait, leſt the part bee benummed : But if the part will not admit a ligature, then is hee to apply a defenſive to the parts adjacent made of *Bole,*

terra

terra ſigillata, ſanguis draconis and ſuch like tempered with the whites of egges. Secondly, he is to ſcarifie the wound if it be not large enough already, and to apply cupping glaſſes with a large flame, to make the ſtronger attraction: If the part cannot be cupped, yet it is alwayes to be ſcarified, and the blood to be drawne by a dry ſpunge, not wet in water. Thirdly, it is not amiſſe to pull the feathers from the bummes of hens or cocks, and to apply them often to the wounded part, or to apply young pigeons or chickens hot being cut aſunder.

After this he is to apply attractive locall medicaments, as cataplaſmes made of garlick, onyons, pigeons dung, muſtard, walnuts, treacle, rue, leven, ſalt and honey. *Galen li. 2. de antidot. c. 11.* highly commendeth an emplaſter made of Pitch, opopanax, and vineger, and affirmeth that he never ſaw any that dyed unto whom this emplaſter was applied: The compoſition is this: ℞ *picis lib. i. liqueſcat, cui adde opopanacis in aceto acerrimo ſoluti, atque ad juſtam conſiſtentiam reducti* ℥iij. *formentur deinde magdaleones.* Theſe attractive medicaments are to be applied before a weeke at the furtheſt be expired, otherwiſe they will prove unfruitfull. See *Dioſcorid. li. 6. c. 39.* and *Paulus Ægineta li. 5. c. 3.* You ſhall know the poyſon to be overcome if you uſe the experiments ſet downe by me to know by the wound it ſelfe, whether the dogge was mad. Locall medicaments.

Bleeding is not to be uſed, becauſe it weakeneth, and ſtirreth the poyſon. Bleeding.

Purgation in like manner in the beginning is not convenient; for it is like that it will draw the poyſon to the inward parts: If the poyſon hath poſſeſſed the inner parts, then it will not be amiſſe to uſe evacuation ſundry times before the 40th day be expired: for wounds cauſed by the bitings of mad dogges, muſt be kept open 40 dayes at the leaſt. The purgative medicaments which are to be uſed in ſuch caſes, ought to be ſtrong according to all authors: as antimonie, white Ellebor, *mercurius vitæ, pilulæ de* Purging. When purgation is fruitfull.

lapide lazuli, confectio Hamech. hiera diacolocynth. electuarium Indum majus &c.

The ſecond intention.

I affirmed that the ſecond intention of the Chirurgeon in curing of theſe wounds, was to ſtrengthen the principall parts for the repelling of the poyſon, with antidots contrarie to this poyſon: In the exhibition of theſe you are to give twice as much in curing as preventing. In the ſhops you have alwayes in readineſſe the *Therica Andromachi*, and *Mithridatium*. You may miniſter every morning ʒiß. of either of them for the ſpace of 40 dayes in the morning; but the *Therica* is moſt effectuall: At night you may miniſter ſome other Antidot: I will only ſet downe 3. approved ones.

Antidots.

1 The firſt is *Scaligers* the Father. ℞ *Mithridat. & pulv. rad. ariſtoloch. rot. an.* ʒij. *terr. ſigil.* ʒß. *muſcas quæ de napelli fructibus victum quærunt nro* 20. *cum ſucci citri recentis ſ.q. fiat miſtura, doſ.* ʒiß.

2 The ſecond is ſet downe by *Palmarius li. de morb. contag.* thus: ℞ *fol. rut. verben. ſalv. plantag. polypod. abſynth. vulgar. menth. artemiſ. melyſſophyll. beton. hyperic. centaur. min. ſingul. æquale pondus. colligantur juſto tempore, ac ſiccentur poſtea in pulverem redigantur. doſ.* ʒiß. *in principio ſingulis diebus* 3. *horis ante cibum, ſed* ʒii. *aut* 3. *ſi poſt ſeptimanam vocemini.* This is a parable and effectuall antidot. He adviſeth alſo to foment the wound with wine or mead, wherein ʒiß. of this powder hath beene diſſolved, and then to apply your other locall meanes. Hee addeth in like manner, that neither man nor beaſt ever dyed which uſed this medicament, although it were miniſtred long after the wound was received; ſo that the wound was not in the head in thoſe parts which are above the mouth, and not waſhed with cold water as ſoone as it was received.

3 The third is *Antidotus de cancris fluviatilibus*, commended by *Dioſcorid. li. 6. c.* 37. and *Galen* 2. *de antidot. c.* 11. *it.* 11. *de ſ. m. facul. Galen* affirmeth that none ever died who uſed the powder of theſe crabs rightly. They muſt be gathered after the beginning of the dogge dayes, when the moone is 18. dayes

dayes old, and calcined in a frying pan of red copper : then they are thus to be miniſtred : ℞ *ciner. cancror.* ʒii. *pulv. gentian.* ʒi. *vini meraci cyathos* iiij. *Miſc. ut fiat poᵒ bibenda ſingul. dieb. mane per dies* xi. See *Galen lib.* 11. *de ſ. m. faculi.* Theſe antidots may be miniſtred not only in wine, but in poſſet drink, and broths alſo to give the patient content.

LECT. XIV.

Of a wound made by the biting of an adder.

YOu heard in my laſt Lecture, how wounds made by the biting of mad beaſts were to be dealt withall : In this Lecture I will ſhew how wounds cauſed by the bitings and ſtingings of Serpents are to be cured. God hath created a ſtrange variety of them : who as they ſerve for the perfecting of the *univerſum* or frame of the world ; ſo they are employed by God for the puniſhing of ſinners. Read a memorable example of this, *Num.* 21. *à verſ.* 5. *ad.* 9. where it is ſet downe, that for the murmuring of the people of Iſrael, God ſent againſt them [a] firy Serpents, by the biting of which much people died, untill at the laſt *Moſes* ſet up upon a pole the braſen Serpent by the commandement of God, by the beholding of which, the bitten perſons were kept alive : This braſen Serpent was a figure of Chriſt crucified, as he himſelfe teſtifieth, *John* 14, 15. in theſe words, *ver.* 14 : *As* Moſes *lifted up the Serpent in the wilderneſſe : Even ſo muſt the Sonne of man be lifted up:* verſ. 15. *That whoſoever beleeveth in him ſhould not periſh, but have eternall life* ; for according to *Eſaiah c.* 53. *v.* 5. *Hee was wounded for our tranſgreſſions, he was bruiſed for our iniquities : The chaſtiſement of our peace was upon him* ; *and with his ſtripes wee are healed. Lucan* the Poet in the ninth booke of his *Pharſalia* ſetteth downe the journeying of *Cato* and his Souldiers through the deſart of *Lybia*, where out of *Nicander* the ancient Greeke Poet and Phyſitian in his *Theriaca*, hee maketh

[a] *Iunius* in his traſlnation called them *preſters.*

keth mention of ſundry Serpents. *Lucans* verſes are thus turned into Engliſh meeter by Mr. *Thomas May*, the moſt eminent Engliſh Poet of our age.

[a] The Poets faine theſe Serpents to have beene bred of the quittour which did flow from *Meduſaes* head, and the earth.

[a] *Firſt from that duſt ſo mixd with poiſon, bred,*
Roſe the ſleep-cauſing aſpe, with ſwelling head,
Made of the thickeſt drop of Gorgons goare,
Which in no Serpent is compacted more.
In ſcaly folds the great Hemorrhous lyes,
Whoſe bite from all parts drawes the flowing blood.
Cherſidros then, that both in land and flood
Of doubtfull ſyrtes lives; Chelydri too,
That make a reeking ſlime where ere they goe:
The Cenchris creeping in a tract direct,
Whoſe ſpeckled belly with moe ſpottes is deckt,
Than ere the various Theban [b] *marble takes.*
Sand coloured Ammodites: the horned ſnakes,
That creepe in winding tracks: The Scytale,
No Snake in winter caſts her skin but ſhe:
The [c] *double head: Dipſas, that thirſty makes;*
The water ſpoyling Newt, the dart [d] *like Snakes.*
The Pareas, whoſe way his tayle doth guide:
The Preſter too, whoſe ſting diſtendeth wide
The wounded's foamy mouth; The Seps, whoſe bite
Conſumes the bones, diſſolves the body quite.
The Baſilisk, whoſe hiſſe all Snakes doth ſcarre,
Ton Dragons too, &c.

[b] *Ophites Ceraſtes, &c. in.*

Amphisbæna.
[c] *Natrix.*
[d] *Acantia, &c.*

Ofearefull brood armed againſt the ſinfull ſonnes of *Adam*: Wee who are borne in theſe parts are to glorifie God, who hath freed the ſoyle of ſuch miſchievous creatures. I meane not to inſiſt in the deſcription of every one of theſe Serpents, the ſymptomes which enſue after the biting, and the manner of cure, becauſe it would bee a fruitleſſe labour, the land being free from them, and ſo from their harme. In this countrey onely the Adder, and the ſlow-worme are found, who oftentimes doe great hurt. Of theſe then I will diſ-

diſcourſe, as alſo of the Toad, becauſe here is great ſtore of them, and their poyſon is able to procure death.

I will firſt deale with the Adder: It is called *Coluber* in Latin, either *quia colit umbras*, becauſe it haunteth ſhadowy places, or *à lubricis tractibus*, from her winding pace or path. It is long like an Eele, black on the back, having yellow ſpots on the belly: The head is more flat than the Snakes head. It is a crafty and venomous Serpent, biting ſuddainly thoſe that paſſe by. Whereupon *Jacob* in his Teſtament, or laſt Will, *Geneſ.* 49. *verſ.* 17. calleth *Dan* by reaſon of *Sampſon* who was of that Tribe, *Coluber in via*, an Adder in the way. The Etymon of *Coluber*. The deſcription of it.

When the Adder hath bitten a man, the part becommeth of a Leady colour, and very painfull, and if it bee not preſently cured, much black and ſtinking quittour doth iſſue out from the ſore, like to that which doth flow from *Ulcus depaſcens*, a fretting ulcer. If it bite any cattell very often they dye. The ſignes of her biting.

When I was in the City of *Bathe* in Sommerſet-ſhire, nine yeeres agoe, a litle land Spaniell bitch belonging to one Maſter *Lloyd* who dwelt three miles from thence being bitten by an Adder by the way, died the next day having intolerable paine and ſwelling of the whole body. A Hiſtory.

The poyſon of it is hot, for an Adder is more hot than a Snake; which is not poyſonable here with us, although it be in hot countreyes, as *Italie*. The Adder hiſſeth and moſt nimbly moveth the forked tongue, as the Snake doth.

As for the curation of the biting of an Adder, the ancients have ſet downe many medicaments, both ſimple and compound for the curation of wounds inflicted by venomous beaſts: you ſhall finde great ſtore of ſimples in *Dioſcorides*, throughout the whole ſeventh booke, and *Nicander* in his *Theriaca*, and *Alexipharmaca*. *Grevinus lib.* 1. *de venenis*, *cap.* 36. & 37. hath gathered them together, whom you may peruſe. *Petrus de Abano in lib. de Venenis*, *cap.* 4. ſetteth downe ſeven herbes effectuall againſt poyſon, and the bitings of venomous beaſts, which are theſe, *Hypericum*, *Vincetoxicum*, *Enula campana*, *Raphanus*, *Dictamnum*, *Ariſtolochia*, *longa & rotunda*, The curation of the byting of an Adder.

rotunda, Lactuella. He affirmeth theſe to have equall faculty with the triacle it ſelf againſt poyſon. The ancient Phyſitians only uſed theſe and ſuch like, before Triacle and Mithridat were invented. The juyces or the powders of the herbs they gave inwardly, to the wounds or ſores they applyed alſo the herbs. As for compound medicaments, you may uſe *Mithridat, Theriaca Andromachi, Theriaca magna Eſdræ, Diateſſeron, Electuarium Orvietani.*

How one bitten by an Adder is to bee dreſſed.

If you be called to cure one bit by an Adder: Firſt apply ligatures 3. or 4. inches above the bitten place; hold up the member as high as may bee, ſcarifie the part, and apply cupping glaſſes: If you cannot apply them, apply defenſives above the part.

Dreſſe the wound with Triacle diſſolved in the oyle of Scorpions; inwardly miniſter the Triacle it ſelfe in *cardaus*, and Triacle water, or *Theriaca magna Eſdræ*, which he is ſaid to have brought from *Babylon*, when hee returned from his exile with other Jewes to their native Countrey; *Electuarium Orvietani*, the juyce and leaves of the aſh are highly commended.

Noţa.

It is a very ſtrange thing that if a Viper be compaſſed with the leaves of the aſh on the one ſide, and fire on the other ſide, ſhee will rather goe towards the fire than the leaves of the aſh. Such an antipathie is betweene the Viper and the aſh.

A Hiſtory.

Ambroſ. Parœus lib. 20. cap. 23. ſheweth how hee cured one bitten by an Adder: becauſe the Hiſtory is memorable, I thought good to ſet it downe: At what time (ſaith hee) *Charles the Ninth lay* at *Melines*, I and Doctor *le Fure* the Kings Phyſitian, were ſent for to cure a Cook of the Lady of *Caſtroperſes*, who was bitten by an Adder, as he was gathering wild hops in a hedge. The Cooke as ſoone as he was bitten in the hand, ſucked the wound with his mouth, thinking thereby to mitigat the paine, and draw out againe the poyſon. But as ſoone as the tongue touched the wound, preſently it ſo ſwelled that he could not ſpeake. Beſides this his arme even

to

to the ſhoulder blade did ſo ſwell, & cauſed ſuch ſharp paine, that hee ſwooned twice while I was by him, his countenance becomming yellowiſh, and of a lived colour like to a dead man: and although I did deſpaire of the recovery of the man, yet I forſooke him not, but waſhed his mouth with triacle diſſolved in white wine, and miniſtred it to him adding *aqua vitæ*. I ſcarified the arme with many and deep ſcarifications. I ſuffered the blood which was wateriſh and ſanious to flow plentifully from the parts about the ſore; I waſhed the ſcariſications with Mithridate and Triacle, diſſolved in *aqua vitæ*. The ſick perſon I layd in his warme bed, and cauſed him to ſweat, but forbade him to ſleep, leſt the poyſon ſhould have beene drawn to the inner parts. By theſe meanes I ſo prevailed, that the next day all the maligne ſymptomes ceaſed. Wherefore to finiſh the cure I thought good that the wound ſhould bee long kept open, and waſhed with triacle: Neither was I deceived, for within a few dayes he recovered. Hitherto is the diſcourſe of *Parrey*: by it you may obſerve that whether poyſon bee inwardly taken, or externally impreſſed, it is good to watch untill the force of the poyſon bee abated, leſt it ſeize upon the inward parts.

They who catch the Adders, apply the powder of them to the part affected, if they be bitten, and take this ſame powder inwardly; as they who catch the Vipers, uſe the powder and trochiſces of the Vipers. Others commend the powder of Tinne, and commend it as a ſecret and ſpecificall medicament. But the method ſet down by mee is the ſafeſt way to cure: If you would make triall of the powders of the Adders, or Tinne, I would adviſe you to mingle them with the *Theriaca*. Now a dayes the Adder and Viper wines are in great requeſt: But a queſtion may be moved whether they be wholſome. *Dub.*

Nicolaus Florentin. 1. *de Venen.* following *Rabbi Moſes*, and others, writeth that Viper wine being often drunken, is effectuall againſt poyſon. *Galen* alſo *Sect.* 6. 6. *Epidem. Text.* 5. affirmeth both Viper wine, and the fleſh to bee good againſt poyſon:

poyſon: So that Viper wine by theſe mens judgements, cannot but bee good for healthfull perſons: When I travailed in *Bohemia*, I obſerved, that the Earle of *Roſenberg* the younger, during the ſummer time did eat the fleſh of the Adders, for preſervation of the ſight, and ſtaying of old age: But *Dioſcorides* and others give advice that care bee had that Serpents be not ſuffered to have acceſſe to wine veſſels, leſt they poyſon the wine; which if they doe, then ſurely the wine is like to make a ſpeedy way for the poyſon to aſſault the principall parts.

Sol. This doubt I think may be thus ſolved: If by chance Vipers or Adders be drowned in the wine; becauſe the whole body lyeth in the wine, neither head, tayle, guts or gall being taken away; and no time of fomentation being granted, undoubtedly the wine muſt be venomous: But if it be made by art, theſe parts being taken away, and the fleſh well prepared, and fermentation permitted; ſuch a wine muſt be wholſome, if a skilfull Phyſitian unto whom diſeaſes and complexions are knowne, do order the manner of taking of it.

Of the Slow-worme. It is now time to come to the Slow-worme: it is called in Latin *Cœcilia* and *Cœcula*, becauſe it is blind, and by *Nicander* πήληξ.

The deſcription of it. It is a little ſlender Serpent; it hath a hard skin of divers colours: For it is partly of a bleawiſh, partly yellowiſh, partly of a light purple betweene theſe: It hath ſmall eyes, and covered with a thin skin. It hath very ſmall teeth, but more to be ſeene in the lower, than upper gum. Its tongue is cloaven: It hath a chink in the belly, which being opened it layeth egges: After the egges are laid, the chink doth conſolidat againe. They are in length about a ſpan, and about the thickneſſe of a mans finger: towards the taile it is more ſlender: The female is more black than the male: The paſſage of the excrements, and place of conception, is tranſvers: It commeth abroad in July: It is harmleſſe unleſſe it be hurt: It is ſeene moſt often in hilly places: In the winter it lyeth in the cliffes of rocks, and cavities of the ground. The ſtorks do much prey upon them.

It

It is very venomous, the bitings of it are very ſmall, and ſcarce appeare. The place bitten is red, and the whole body becommeth enflamed. Signes of its bitings.

As for the curation, you are to ſcarifie the part, and to apply a *ventoſe*. Then you are to apply Mithridate, Triacle, or *terra ſigillata*, mingled with the oyle made of Vipers or Scorpions. *Platerus* affi meth, that a Triacle made of the trochiſces of it, in ſtead of the trochiſces of the Vipers, is effectuall againſt the plague. The cure of them.

This Lecture I will conclude with the ſetting downe of the curation of the poyſon of a Toad: In Latine it is called *Bufo*: The colour of it is blackiſh, mingled of blacke and darke yellow; the backe is bunched and full of knobs; the skin is very thicke; the head is broad and thicke, and the colour thereof about the necke is ſomewhat pale; the heart is in the necke, and therefore it is not quickly to bee killed, unleſſe the necke be cut aſunder, or deeply pierced: their eyes are of a flaming yellow colour, like thoſe of a Goſhawke: It leapeth not as Frogs, but creepeth ſlowly; partly by reaſon of its ſhort legs, partly by reaſon of its ſluggiſh body: It is altoge her dumbe; it coupleth not only with Toads of it owne kinde, but frogs alſo: It delighteth in dry places, as in ſtables, dung, beds in gardens, and caves of the earth; it feedeth upon the ſlime of the earth, earth-wormes, and bees which it draweth out of the hives by its venomous breath: It delighteth much to be in places where Sage is planted. The deſcription of a Toad. Its place of abode.

It doth not onely infect all things over which it paſſeth by it poyſonable piſſing, but by beſpattering herbs with its venomous ſlaver. Wherefore, it is not to be wondred if men dye, who have eaten unawares herbs, ſtrawberries, and muſhroms infected by Toads: If one doe move it, it ſwelleth, and doth looke ugly with flaming red eyes, expecting opportunity to dart out virulent piſſing, and a white juyce out of the mouth; yea, if it can touch one, it doth bite by the hard brims of the lips: Being pricked thorow the middle, it will live ſome How it doth infect.

dayes; and from it will drop a bloudie poyson mingled with a yellow water.

Its enemies. The enemies of the Toad are the Cat, the Poulkite and Viper. If one be infected with the poyson of a Toad, these symptomes ensue: First, the colour of the body is changed to an ugly pale colour, which is seene in the box wood; the party hath difficulty of breathing, the breath stinketh, the seed floweth sometimes against the will, the hickets troublesome: *Dioscor. lib. 6. cap. 32.* *Caspar Schwenckfeldius in Theriotropheo Silesiæ tractat. de Reptilibus* addeth a sudden giddinesse, convulsions now and then, the blacknesse of the lips and tongue, a froward countenance, much vomiting, dimnesse of the sight, a dysentery, loathing of meat, raving, the falling out of the teeth, a numnesse of the whole body, a deepe sleeping, a cold sweat, and at the last death.

The curation of the poyson of the Toad. As for the curation, *Dioscor. loco citato* commendeth vomiting, the drinking of strong wine, running and quick walking, and two drams of the root of the reed or cane; whereby we may gather, that both the temperament of the Toad and the poyson is cold. *Schwenckfeldius loco citato*, commendeth womans milke, Triacle, Mithridate, Harts-horne, *aqua Theriacalis*, oyle of Vitriol, Turbith minerall, the infusion of *Stibium*. The body is to be washed with such a *lixivium* as is prescribed against gangrenes: Often bathing is good, made of sea-water, wherein *scordium, hypericum, artemisia*, Wormewood, Germander, Lavender, Tyme, Sage, Tansey, and such like have beene boyled. It is not amisse to apply dryed Toads to the arme-pits, the region of the heart, and to the wrists. Many thinke the wearing of the Toad-stone, and rubbing of venomous wounds with it to be very effectuall.

LECT.

LECT. XV.
Of wounds made by Gun-ſhot.

HItherto I have diſcourſed of Wounds, which were knowne to the ancient Phyſitians and Chirurgeons: now I am come to ſpeake of wounds made by Gun-ſhot, not knowne to them. *Bertholdus Niger, Schwartz,* or *Blache* by ſurname, *anno* 1380. a Franciſcan Friar, and an Alchymiſt, found out the making of Gun-powder, and Ordinances which now are in uſe: He only perfected this miſchiefe: for the uſe of Guns, although rude, was before: For in the time of *Carolus Magnus, Gamoſeus* King of Friſland, killed the Count of Holand, and two of his ſonnes, with a Peece. And *Roger Bacon,* who died about the yeare of the Lord 1284. maketh mention of Gun-powder. *Nauclerus* affirmeth Powder and Ordinances to have beene invented in the dayes of *Otho* the fourth, and *Innocentius* the third, in the yeare of the redemption of mankinde, 1213. *Froiſſard anno* 1340, and 1353. maketh mention of Guns. *Petrarcha,* who died *anno* 1374. doth the like. [a] You may reade in the hiſtory of *Alphonſus* King of Caſtile, when he beſieged *Algezira,* a famous Towne of the Moores, 3. *Auguſt, anno* 1342. that they in the Towne ſhot out of it bullets of iron out of Ordinances, according to *Mariana.* Yea, *Petrus Matterus* affirmeth, that braſſe Ordinances have beene uſed by the Chinoyes many ages agoe: So that the Frier was not the inventer, but perfecter of Guns and Gun-powder.

[a] *Sethus Calviſius Chronolog. pag. 752. col. 2.*

As for the wounds which are made by Gun-ſhot, theſe points concerning them ſhall be ſet downe; firſt, their nature; ſecondly, their differences; thirdly, their ſignes; fourthly, their ſymptomes; fifthly, their prognoſtickes; ſixthly, the medicaments which have beene proved effectuall in the curation of theſe wounds.

The nature of theſe wounds.

The nature of them I will ſet downe in theſe three propoſitions: Firſt, wounds made by gun-ſhot are not poyſoned, if in the melting of the bullets nothing be added to the metall. This is the opinion of all Authors, if you except *Vigo, Alphonſus Ferrius, & Franciſcus Rota Bononienſis.* This propoſition thus I prove: Neither the gunpowder, nor the bullet is poyſonable; therefore the wounds cauſed by them are not poyſoned. As for the gun-powder, it is not venomous, whether you conſider each ſimple whereof it is made ſeverally, or them all joyntly in the compoſition: for firſt of all, the brimſtone is not venomous, *Galen. 9. ſimpl.* 36, affirmeth it to be effectuall againſt the itch, and daily experience proveth this to be true: It is good alſo in diſeaſes of the lungs, according to *Dioſcorid. lib.* 5. *c.* 73. Sal-peter is uſed in the curation of burning fevers; there is none ſuch a novice in the practice of phyſicke, unto whom the faculties of *Lapis prunellæ* is not knowne; yea, it may be ſafely uſed inſtead of ordinary ſalt to meat. The coles either of the willow, or ſtalkes of hempe are onely drie, and have a ſubtill ſubſtance, whereby they are eaſily ſet on fire, by the match or ſparkles of fire. Neither is the whole compoſition poiſonable, as *aqua fortis*, or *aqua regis* are, whoſe ingredients, ſeverally uſed, are not venomous, for it may be miniſtred in milke to kill wormes in dogs or ſtrong children; yea, the German ſouldiers will drink it before they fight; and it is good to be applyed to ſcalded heads. As for the bullet, it is in like manner harmeleſſe; for the powder made of it is good againſt maligne ulcers, and if it be beat out into a plate, it will ſtay the increaſe of tumors in the beginning: Beſides this, bullets have lyen long in the bodies of ſome perſons, not procuring any harme.

6. De ſclopetor. vulner. c. 4. *&c. de balbr. tormen. vulnerib. c.* 13.

The Gunpowder is not poyſonable.

The bullet is not poyſonable.

The ſecond propoſition: Such wounds are never without contuſion in the fleſh, ſeldome without tearing of tendons and nerves, and often cauſe fractures in the bones, by reaſon of the violence and blunt hard ſubſtance of the bullets: This propoſition needeth no confirmation: for theſe effects offer themſelves to the eye in theſe wounds.

The

The third propoſition: A bullet may bee ſo made, that it may cauſe a poyſoned wound: it is the opinion of *Quercetan, Tractat. de his vulneribus, c.* 1. And it may bee made good by three reaſons: Firſt, weapons made of ſteele, the hardeſt of all metals, may be made poiſoned; much more then bullets made of lead or tinne, ſoft and porous metals. That ſteele weapons may be poyſoned, theſe Authors witneſſe: *Homer* 1. *Odyſſ. Theophraſt. lib.* 9. *de hiſt. plant. c.* 15. *de Scythis idem affirmat Plin. lib.* 12. *cap.* 53. *de Dalmatis & Dacis Æginet. lib.* 6. *cap.* 88. *& generaliter de Barbaris Dioſcorid. li.* 6. *ca.* 20. Secondly, experience teacheth us that metals may ſundry wayes bee altered by mingling ſome things with them, or quenching of them in ſome liquors: ſo Braſſe is made of Copper, Lead may bee hardned, and Tinne may bee cauſed to leave his crackling, and Copper bee made white by addition of Arſenicke, and Iron may bee hardened, if it be quenched in vineger, and the juyce of the Rettiſh, or Smiths water: It will by the contrary bee made ſoft if it be quenched in the juyce of the Hemlocke, and common Mallowes, if a little Soape be added. The third reaſon is this: poyſonable ſpirits and oyles drawne from minerals, may be mingled with metals, ſo that they may participate of their venenoſitie: Wherefore, if bullets imbibe ſuch, if they ſtay long in the bodie, doubtleſſe they may cauſe a poyſoned wound; for the heat which the powder cauſeth in the bullet, is not able to ſeparate them: ſuch is the oyle of ☿ ſublimat rectified from Arſenicke: And although this be true, yet it is ſtrange that any man ſhould thinke every wound made by gun-ſhot to be poyſonable; ſeeing experience teacheth that they may, yea, and are cured by meanes which have nothing effectuall againſt poyſon, as ſhall be declared anon. Beſides this, they are not accompanied with ſuch fearfull ſymptomes as venomous wounds are.

Bullets may be poyſoned.

The differences of theſe wounds are taken from the diverſitie of the ſimilary parts wch they offend; for either they make a ſolution of unitie in the fleſhy parts, or in both the fleſhy and

The differences of theſe wounds.

and ſpermatick parts : The ſpermatick parts are either ſoft or hard : The ſoft are nerves, tendons, ligaments and membranes : The hard are two, Cartilages and bones : The nerves, tendons and ligaments are contuſed and torne, the membranes are divided and bruſed. If the bones be affected, wee are to conſider what a manner of fracture is cauſed by theſe wounds. Then according to *Avicen fin.* 5. 4. *tract.* 2. *c.* 1. there are three kinds of fractures ; *Tranſverſalis*, when a bone is tranſverſly broken, as it happeneth in fractures of the armes and legges : *Fiſſualis*, when a bone is broken according to the longitude of it, as appeareth in chinkes of the ſcull ; and *Fruſtalis*, when a bone is broken into ſmall peeces or ſhivers. Now it is manifeſt that the third kind of fracture is moſt commonly ſeene, when a bone is fractured of a gun-ſhot ; ſeeing the inſtrument cauſing the fracture is blunt, and very forcible.

The ſignes of theſe wounds.

As for the ſignes of theſe wounds ; they are taken firſt from the figure : for theſe wounds are alwayes orbicular : Secondly, from the colour, for the part is either of a livid colour, or of a blew colour mingled with greene, or of a violet colour ; ſometimes the wound is black, and the adjacent parts livid. Thirdly, from the feeling of the blow : for when one is wounded hee feeleth as he thinketh a ſtone, or a peece of ſome heavy and blunt inſtrument entering into the part. Fourthly, from little blood iſſuing out : for the part being contuſed the brims quickly afterward ſo ſwell very often, that bloud is ſtayed from flowing. Fifthly, from the heat of the part ; which happeneth by reaſon of the quick and vehement paſſing of the bullet, or grievous contuſion of the parts wounded. Sixthly, from the adjuncts, as if burning appeare : this is diſcerned, if puſtules doe appeare, if a ſcorching heat, drineſſe, wrinkling, hardneſſe of the skin, and burning of the cloathes doe offer themſelves to the ſight ; burning is cauſed if the peece be diſcharged not farre from the wounded party. Theſe are the ſignes of wounds made by gun-ſhot, if the bullet be not poyſoned.

If

If the bullet be poyſoned, theſe ſignes will appeare. Firſt, an ugly colour will appeare, as if it tendeth to mortification. Secondly, horrible paine, and pricking. Thirdly, great inflammation. Fourthly, a heavineſſe of the whole body. Fifthly, a ſharp fever. Sixthly, fainting. Seventhly, raving, and eſpecially if no evident cauſe can be given for theſe accidents. Eighthly, the bullet it ſelfe will ſhew the poyſon; for if you put the bullet into a ſublimatory veſſell, and put a ſtrong fire under it, a black and ſtinking ſmoake will riſe from the metall, and the upper part of it will be of a blackiſh or livid colour. If you cannot have the opportunity to doe this, then cut the bullet aſunder; if it be poyſoned, it will be of a violet colour. Signes of a poyſoned bullet.

The ſymptomes of ordinary wounds made by gun-ſhot are theſe; contuſion, paine, inflamation, convulſion, heat, palſie, if the inſtruments appointed for motion be torne, the naturall colour of the part altered, and ſometimes a gangrene, and a mortification if the wound be great, and in or neere to a joynt. If the bullet be poyſoned, all theſe ſignes and ſymptomes will appeare; but ſooner and more vehement, than if it were not. But becauſe I have diſcourſed of moſt of theſe ſymptomes in the generall doctrine of wounds, I will remit you to the Lecture, wherein they are handled; of a grangrene and a ſideration, becauſe they are ſymptomes which may enſue after all ſorts of ſolution of unity, I will handle them when I have ſpoken of fractures and luxations in their proper place. The ſymptomes of theſe woúds. Lecture 6.

As for the prognoſticks receive theſe. Firſt, if a fleſhy part be only wounded, and the conſtitution of the party bee laudable, and the aire favourable, the wound may be cured without any great difficulty. Secondly, if the ſpermatick parts be violently torne or broken, if the temperature of the party be not laudable, but *Cacochymicall*, if the aire be hot and moyſt, which falleth out when the ſouth-wind bloweth, and if ſignes of poyſon doe appeare, it is to be feared that a gangrene and mortification will enſue. Thirdly, theſe The prognoſticks.

wounds

wounds yeeld a ſtinking *ſanies* if the parts be much torne, and much humor be ſent to the wounded part which quencheth the naturall heat. Fourthly, theſe wounds are harder to bee cured, than thoſe which are made by other weapons, by reaſon of the contuſion which ſtill doth accompany them. Fifthly, theſe wounds come more ſlowly to ſuppuration than others doe; partly becauſe the naturall heat is much abated, and partly becauſe the ſpirits are much diſſipated by reaſon of the great contuſion.

The indications of curing.

It is now time to come to the curation of theſe wounds. The firſt intention of curing is to remove from the wound

1 all extraneous bodies, as the bullets, peeces of garments, paper, peeces of wood, or metals, contuſed fleſh, clotted blood, ſhivers of bones, and ſuch like: But ſeeing I have ſhewed in the third Lecture concerning this ſubject, which I now have in hand, how extraneous bodies are to be taken out of wounds, let me deſire you to have recourſe thither.

2 The ſecond intention is to apply convenient medicaments to the part affected. *Joubertus* commendeth this Topick, ℞ *axungiæ ſuill. depurat. vel butyri recentis* ℥viij. *præcipitati loti, at in tenuem pulverem redacti* ℥j. *camphuræ in aq. vitæ ſolutæ* ℥ij. *exquiſite miſceantur.* If in ſtead of the *axungia* you take *arcæus* his liniment, the medicament will be the more effectuall: yet the medicament ſeemeth to bee proper, for *axungia* and butter are ſuppurative and *præcipitat.* doth further ſuppuration cauſing little or no paine, and the camphore doth help penetration, and reſiſteth putrefaction.

Lib. 10. in principio.

Ambroſe Parrey commendeth *oleum catulorum* or the oyle of whelps, *cujus hæc eſt deſcriptio.* ℞ *ol. lil.* ℔. ij. *catulos caninos duos vivos, coq. hæc ſimul quoad carо ab oſſibus abſcedat nox injiciatur vermium terreſtrium in vino mundatorum* ℔. j. *qui eouſque elixentur quoad arefacti omnem ſuccum in oleo depoſuerint: Tandem ſit colatura olei, cui admiſce terebinthinæ Venetiæ* ℥vi. *aqua vitæ* ℥ij. *verum ſi partes nervoſæ aut articuli vulnerentur plus terebinthinæ quam olei uſurpandum eſt, quia partes iſta majorem quam carnoſæ deſiccationem requirunt.*

In

In the dreſſing of theſe wounds ſeven cautions are to bee had. Cautions to be obſerved in dreſſing.

Firſt, wee may uſe moderatly, calcined vitrioll diſſolved in *aquæ vitæ* if the South wind blow, and you feare putrefaction; for although it be not ſuppurative, yet it reſiſteth putrefaction.

Secondly, we are to ſhun eſcharoticall medicaments for three cauſes. Firſt, becauſe they procure paine, inflammation, fevers, a gangrene, and ſuch fearfull ſymptomes. Secondly, becauſe they hinder ſuppuration. Thirdly, becauſe the eſchare doth keepe in putrid vapours, which may paſſe from the leſſer to the greater veſſels, and ſo to the principall parts, and ſo cauſe a fever.

Thirdly, the tents at the firſt are to be made greater and longer, that the wound may be ſufficiently dilated.

Fourthly, if the contuſion bee memorable, and poſſeſſe much of the adjacent parts, they are to bee ſcarified to diſcharge the part of congealed blood, which is apt to putrefie.

Fifthly, if there bee any burning ſuch medicaments are to be uſed as are good againſt burning, ſuch is this; ℞ *ol. lil. albor. & lini an.* ℥ij. *infrigidantis Galeni* ℥i ß. *ol. laurin.* ℥ß. *fol. ſempervivi major. plantag. & cort. interior. ſambuci an. man.* j. *pingued. ran.* ℥ß. *Bulliant omnia lento igne ad ſuccorum conſumptionem ac coletur medicamentum, cui adde flor. æris* ℥j.

Sixthly, cooling and aſtringent medicaments are not to be uſed after the firſt dreſſing, becauſe cooling medicaments quench the naturall heat, and hinder ſuppuration: and aſtringent medicaments keep in putrid vapours, which may bring a gangrene. Wherefore medicaments anodine, emollient, and ſuppurative are convenient: as this; ℞ *mic. pan. trit.* ℥iiij. *lact. recent.* ℔ j. *flor. chamemel. & melilot. an. pug.* j. *farin. hord. & fabar. an.* ℥j. *coq. omnia ad Cataplaſmatis conſiſtentiam: tum adde vitellos ovorum* ij. *ol. viol. & roſ. an.* ℥i ß.

Seventhly, it is ſufficient to dreſſe the wound once in the ſpace of 24. houres. If much quittour flow, or if the party bee feveriſh and feele great paine, it is to bee dreſſed every

twelfth houre; when little quittour iſſueth, it is ſufficient to dreſſe it once a day. We may beſides theſe Topicks uſe to theſe wounds the oyle of linſeed, lilies, egges, Saint Johns woort, elders, earth wormes, and camomill, with the yolks of egs and ſome ſaffron, untill the wound come to digeſtion, which will be the fourth or fifth day. Then uſe abſterſive medicaments, as *Paracelſus* his mundificative, or *mundificativum de apio:* The wound mundified incarnat, and laſt of all skinne it with Epuloticall medicaments, proceed thus if the wound hath only offended the fleſhy parts.

If the ſoft ſpermatick parts bee wounded and torne, this medicament is effectuall: ℞ *terebinthinæ Venetæ, ol. terebinthin. & hyperic. an.* ℥ij. *turbith. flavi* ʒ ß. *tutiæ, euphorb. & calcis vivæ, an.* ʒj. *miſc.* If the hard ſpermatick parts, as the cartilages and bones be ſhivered: ℞ *prædict. compoſit. terebinth. ol. hyperici & terebinthinæ* ℥j. *pul. cephal.* ʒi ß. *applicetur medicamentum calefactum.* This medicament will further ſuppuration, and procure the ſcaling of the bone, if it muſt be ſo, and will ſave that which is ſound from carioſity.

How a poyſoned wound is to be cured.

If you perceive by the ſignes ſet downe by mee, that the bullet hath beene poyſoned, and ſo have cauſed a poyſoned wound, the brims are deeply to bee ſcarified, ventoſes to bee applyed, and mithridate and triacle inwardly to be miniſtred in *Carduus*, ſtrawberry, or black cherry water, taking of mithridate and triacle an. ʒ ß. *aquarum prædictar.* ℥iij. Let the wound be dreſſed with this *Ægyptiacum magiſtral.* ℞ *decoct. lupinor. ac lentium an.* ℔. j. ß. *aceti* ℔. j. *ſalis communis, aluminis an.* ℥j. *virid. æris* ʒ ß. *mellis* ℔. ß. *coq. omnia ad mellis ſpiſſitudinem, tum adde theriacæ* ʒ. ß. Apply this medicament, either upon the tents, or by way of injection, as you ſhall thinke fit. This medicament is good in putrid ulcers: Uſe this medicament untill all fearfull ſymptomes ceaſe: Then proceed with thoſe medicaments, which I have preſcribed for ſuch wounds. In poyſoned wounds you are neither to purge, nor to uſe phlebotomy, untill the force of the poyſon bee abated: But in ordinary wounds made by gun-ſhot, you are to

open

open a veine if the party bee plethorick, and to uſe purgations if the party wounded be cacochymicall.

LECT. XVI.

Of the meanes to avert humours from the wounded head.

AT the laſt I am come to the laſt point whereof I intended to diſcourſe concerning wounds; which is the curation of the wounds of particular members, which require any ſpeciall conſideration differing from the canons of wounds in generall ſet down by me hitherto. Theſe wounds are either of the ventricles, or extremities, or lims. The ventricles are three, the head, the breſt, and the lower belly. Now wounds of the head either cauſe ſolution of unity in the very ſeat of the braine, or in other parts appoynted to be organes of the ſenſes. As for the wounds which are inflicted into the ſeat of the braine, which is called the hayry Scalp, they ſhall be diſpatched in ſetting downe three points. The firſt point ſhall be ſpent in diſcourſing of theſe things, which are common to moſt of theſe wounds. The ſecond ſhall ſet downe the particular explication of theſe wounds. The third ſhall ſhew what ſymptomes enſue after fractures of the ſcull.

Things common to wounds of the ſeat of the braine.

The things which are common to moſt of theſe wounds are in number foure. Firſt, the averſion of the humour from the wounded part. Secondly, the generall prognoſticks. Thirdly, the deſcription of fit Topicks, which are to bee applyed to aſſwage paine, and ſtay any inflammation. Fourthly, ſhall be ſet down the manner of rowling.

Of averſion.

Averſion of the matter which either hath already brought ſymptomes, or is like to procure, is performed by three

meanes, to wit, by blood letting, purging, and the right ordering of the ſix things not naturall.

Phlebotomy univerſall.

Phlebotomy is either univerſall or particular. The univerſall is performed by opening of a veine. Of this kind of phlebotomy theſe things may bee demanded. Firſt, whether a veine is to be opened, and blood drawne. Secondly, how much blood is to be drawne. Thirdly, which veines are to be opened.

When a veine is to be opened.

As concerning the firſt demand, blood ought to he drawn in three caſes. Firſt, if a competent quantity of blood did not flow out of the wound, when firſt it was inflicted. Secondly, if it bee a great wound, and the party bee ſtrong. Thirdly, if a great inflammation hath invaded the part, or a fever hath ſeiſed upon the party.

How much bloud is to be taken.

As concerning the quantity, blood is drawne either ſo much at one time as is requiſit, or at divers times. If you goe about to draw ſo much blood at one time as is requiſit, you are to ſtop the veine. Firſt, when the pulſe appeareth ſmaller, and ſlower. Secondly, when a faint ſweat doth iſſue out at the forehead. Thirdy, when the colour of the face is changed, and the lips grow pale. Fourthly, when a paine of the heart doth draw on, with yawning, and a deſire to vomit, or to goe to ſtoole. If you are to draw blood ſundry times for this ſame griefe, you muſt continue the doing of this, untill all ill ſymptomes, as inflammation and fever ceaſe. See *Parey lib. 9. cap. 14. Fallop. in Hipoc. de Vulner. Capitis cap. 26.*

The veines which are to be opened.

As concerning the veines which are to be opened, you are to take thoſe of this ſame ſide, and thoſe muſt bee either the *Baſilica*, the Liver veine, or the median if blood doe much abound: But if the plenitude be not great, then it will ſuffice to open the *Cephalica*, or the veines neere to the wounded part, as the veine of the forehead, the veines of the temples, and thoſe which are under the tongue. See *Parey* in the place before cited.

Phlebotomy particular.

A particular detraction of blood is when wee take blood from the part affected. This is performed by ſcarifying the brims

brims of the wound, and applying of ventoſes, or by laying to the leeches, *idem ibid.* If the party be timorous, and loth to admit any kind of bleeding, then you may uſe ſtrong frictions of the hole body, with courſe linning cloaths or of other parts of the body, the head excepted: for theſe will diſcuſſe the ſuerfluous matter, and turne it into a *halitus* or ſtime. For ſuperfluities muſt increaſe, the wounded party omitting the accuſtomed excerciſes.

Of purging.

As for purging it is procured three manner of wayes: Firſt, by cathartical medicaments given by the mouth. Secondly, by clyſters. Thirdly, by ſuppoſitories. And as concerning ſolutive medicaments which are miniſtred by the mouth theſe points may be asked. Firſt, whether purging is ſo to be procured. Secondly, when ſuch medicaments are to be exhibited. Thirdly, of what hidden faculty they muſt bee of. Fourthly, of what force they muſt be.

In which caſes purgative medicaments are to be given.

As for the firſt demand a purgament medicament is to bee miniſtred in three caſes. Firſt, if the party have the head-ache or lumpiſhneſſe. Secondly if a tumour or inflammation appeare. See *Fallop. in Hippoc. de Vulner. cap. c.* 27. Thirdly, if the body be cacochymicall, ſo that there be ſtrength, matter prepared, and the body open and paſſable.

When they are to be given.

As concerning the time which was the ſecond demand, Purgative medicaments are to be miniſtred in the beginning. Firſt, leſt ſtrength decreaſe. Secondly, leſt the fever increaſe. Thirdly, to hinder the humours ſtirred from aſcending to the head. This *Hippocrates* adviſeth in ſharp diſeaſes, 4. *Aphor.* 10.

What faculty theſe medicaments ought to have.

As for the third demand, thoſe medicaments which purge choler, ſeeme moſt fit in wounds of the head: Becauſe the ſymptomes which enſue after theſe wounds, as inflammations and fevers, ſeeme to be the effects of yellow choler.

As for the fourth demand, wee are to ſhun ſtrong and cradiccative medicaments chiefly in the beginning, leſt that by to ſtrong a commotion of the humours, paine, a fever, and inflammation be procured. See *Parey lib. 9. cap.* 14. Wherefore

we muſt uſe gentle medicaments, and which doe not increaſe heat. Such are the infuſion or decoction of the myrobalans mingled with *Electuarium lenitivum*, or *de ſucco roſarum, aut diaprunum ſolutivum*. The doſe muſt not be great, you may miniſter alſo the infuſion of rheubarb, and myrobalans, with the ſyrup of roſes ſolutive with agaricke. The Myrobalans ſtrengthen the ſtomack and head, as alſo the veines. See *Fallop. in Hippoc. de Vulner. cap. c.* 27. *Arcæus lib.* 1. *c.* 4. doth preſcribe ſuch a forme. ℞ *ſyrup. roſ. ſolut.* ℥ij. *aq. plantag.* ℥iij. *utere ut ars præſcribit.* He is of the opinion that no other purgative medicament is to bee miniſtred, and that procuring evacuation by clyſters or ſuppoſitories will ſuffice: But you need not to feare to give the medicaments which I have ſet downe.

The ordering of things not naturall.

Having delivered ſo much as may ſeeme ſufficient to cleare the doubts which may ariſe concerning bleeding and purging: now am I to ſhew you how thoſe things which are called Not naturall, are to be ordered; for the obſervation of this point doth greatly further curation.

Of the aire.

Firſt then as concerning the Aire, it ought to be temperat, and thick, according to *Fallop. in Hippoc. de vulner. cap. c.* 25. For a hot and thin aire doth eliquat and melt the humours, and ſo maketh them more apt for fluxion. A cold aire is hurtfull for the braine, the bones, the ſinewes, and the *ſpinalis medulla* or marrow of the back-bone. If then the aire prove cold, when you dreſſe the patient, hold in a convenient diſtance a chafing-diſh with coales above the head, to hinder the impreſſion of the cold aire. See *Parey lib.* 9. *cap.* 14. Then apply the medicaments being made onely luke warme. If the aire be very hot, then the roome is to be cooled by hanging it with ſheets, and moyſtning them with cold ſpring water, or you may garniſh the windowes with medow ſweet, gaule burnt, borrage, violets, primroſes, cowſlips.

An obſervation.

One thing is to be noted, that wounds of the head are ſooner and more ſafely cured in the winter than in the ſummer: for according to *Hippocrates*, the ventricles are hotter in

in the winter than in the ſummer, and ſo concoct the humours the better. Whereas by the contrary, in the ſummer time the humours are apt to bee made thin, fuliginous vapours are raiſed, and inflammation doth invade.

As for meat and drink, Wine is not to bee granted before fourteen dayes bee expired; for within this ſpace all ſymptomes uſually ceaſe. Wine.

In hot regions where no Beere or Ale is, Barley water is to bee preſcribed. If the wounded party bee of a queaſie ſtomack, or weake, or aged, ſugar may be added, or *oxyſaccharum*, or the ſyrup of violets, or of red roſes ſimple, or of the juyce of limons or citrons. Small beere and ale will ſuffice in thoſe countries, where they may bee had. Drink.

If there bee a fracture, neither fleſh nor fiſh are to bee permitted the firſt ſeven dayes. Firſt, becauſe the wounded party muſt keep his bed; and ſo being deprived of wonted exerciſe, cannot ſo well concoct or digeſt the food. Secondly, to avoid fluxion of humours to the affected part. *Vide Fallop. ib. & Pareum li. 9. c.* 14. Let the wounded party eat Panadoes, ptiſans; uſe not almonds, becauſe they procure the head-ach by filling the head with vapours: ſtewed prunes, reſins of the ſunne, mallowes, *aſparagus*, ſpinach, ſuccory, endive, are good boyled. Lettice although it be not good for the head, yet it may be granted, becauſe it hindereth the aſcending of vapours to the head. After meales it is good to take ſome of ſuch things as hinder the mounting up of hot humours, by ſhutting up and ſtrengthning the mouth of the ſtomack: as the old conſerve of red roſes, the marmalad of quinces, or quinces preſerved, *ſaccharum violatum*, *borraginatum*, *bugloſſatum*, peares ſtewed or baked; coriander and aniſe ſeeds, with one covering of ſugar, are good to bee eaten with the quinces and peares. If fleſh be permitted, then the fleſh of theſe creatures following is to be eaten, chickens, young pigeons, veale, mutton, kids, leverets, mountaine fowles and birds, as partridges, pheſants, turtle-doves, black-birds, thruſhes, larkes and ſuch like. If the wounded party eat of theſe boyled, then Meat.

you

you may boyle with them ſpinach, lettice, purſelaine, ſorell, borrage, bugloſſe, endive and ſuccory; but if they will feed upon them roſted, then make ſippets unto them of verjuyce, the juyce of oranges, limons, citrons, pomegranats, or ſorell with ſugar. If the party will needs eat fiſh, then let him have trouts, pickrels, ſmelts, whyting-maps.

Sleep. As for ſleep let it bee taken in the night time, and not by day, unleſſe an inflammation hath poſſeſſed the braine or the menings. The ſignes of this you ſhall have delivered in its own proper place; for ſeeing according to *Hippoc. 2. Epidem.* bloud ruleth in the ſpring, and in the morning, in this caſe it will not bee amiſſe to ſleepe from three a clock in the morning, till nine a clock in the forenoone: for ſo the bloud ſhall be ſtayed, and kept from any extraordinary motion, which other wayes would aſcend to the head, and increaſe the inflammation.

Watching. If too much watching bee troubleſome, which doth corrupt the temperature of the body, procure crudity, and cauſe heavineſſe and paine of the head, and make the wounds dry and maligne, then the head, the temples, the eares and noſthirles are to be embrocated with ſuch medicaments as coole and moyſten, according to *Galen. 13. Method.* ſuch are *unguentum populeum, roſatum*, oyle of poppies, henbane, mandrake, oyle of roſes, and vinegar of roſes beaten together, taking two parts of the oyle, and one of the vinegar. Inwardly you may give the emulſion of the white poppy ſeeds in barley water, ſweeting it with *ſaccharum violatum, bugloſſatum*, or *borraginatum*: you may give alſo an once and a half of the ſyrup of the white poppy, in two onces of lettice water. See *Parey li. 10. cap. 14.* This is to bee done foure houres after meate, to procure ſleep; for ſleep furthereth concoction, repaireth the theloſſe of the triple ſubſtance cauſed by watching, aſſwageth paine, refreſheth the weary, mitigateth anger and griefe, and reſtoreth reaſon troubled.

How the laudanum is to be miniſtred. To this end you may miniſter alſo a ſmall doſe of *Laudanum anodinum*, but this muſt bee done diſcretly and warily.

First,

Firſt, becauſe the *opium* (if the doſe be often iterat) may cauſe a ſtupidity or lethargy. Secondly, becauſe the ſpices which are added to correct the narcoticall ſimples in the *laudanum*, by eliquating the humours may offend the head.

The roome wherein the wounded party lyeth, muſt bee ſomwhat dark; for too bright a light doth diſſipat the ſpirits, increaſe paine, and the ſymptomes, and ſtrengthneth the fever. Let his lodging alſo be farre from places wherein there are immoderate ringings of bels, noyſe of carts and coaches, and all ſorts of ſmiths. The roome.

Reſt and quietneſſe is moſt convenient, for immoderate exerciſe doth move and agitate the ſpirits, weakneth the body, and troubleth the wounded party: Wherefore ſoft walking will ſerve the turne. Labour and quietneſſe.

Perturbations of the mind are altogether to be abandoned, for the contraction and diſſipation of the ſpirits cauſe great alterations in the body. Perturbations of the mind.

Venery above all other things is to be ſhunned in wounds of the head, chiefly if there bee a fracture; and that not onely while the wounds are in curing, but alſo long after they are cured: for great ſtore of ſpirits are contained in a ſmall quantity of the ſeed, the greateſt part whereof floweth from the braine: Hence therefore all faculties, but chiefly the animall is reſolved and weakned. *Parey* in the place before quoted doth affirme that he hath ſeene death to have enſued in ſmall wounds of the head, even when they have beene cured, by reaſon of venery. Venery.

As for the excretion of the excrements, the body muſt ſtill bee kept ſoluble, leſt, if theſe ſhould be retained, corrupt and noyſome vapours ſhould aſcend to the head: Wherefore if nature be dull and ſlow, evacuation muſt be procured by ſuppoſitories and clyſters. If cathartical or purging medicament muſt be given by the mouth, ſuch as I have ſet downe in the beginning of this Lecture, are to bee miniſtred, whither I remit you. Of the excrements.

Lec.

LECT. XVII.

Of the reſt of the points common to moſt wounds of the head.

THe ſecond generall point concerning wounds of the head ſhall bee diſpatched by ſetting downe the generall prognoſticks of them, which are theſe that here enſue.

1 1. *Nulla capitis vulnera quantumvis exigua:* No wounds of the head although they ſeeme ſmall are to bee ſlighted and neglected; for often times it falleth out, that when a wound is received without a fracture in the head, a man may dye, if fearfull ſymptomes or accidents appeare: as a convulſion, a palſey of one arme or leg, a fever, raving, vomiting, faltring of the tongue. *Valeriol. lib. 3. obſerv. 1. Largius tom. 1. ep. 10.*

2 2. Wounds of the head often become more eaſie or hard to be cured by reaſon of the countries or climats.

Why divers climats alter the curation of ſuch wounds. This doth happen either becauſe the aire is hurtfull by its elementary quality onely, as when it is cold and moyſt, as in *Florence* and *Bononia*, according to *Amat. Luſitan. vent. 6. curat. 100. Quercet. de Vulnerib. ſclopet. cap. 3.* and in *Pariſe*, according to *Parey lib. 10. cap. 8.* Or this doth happen when the aire doth offend by a maligne quality, as is obſerved in *Gallia Narbonenſis*, and thoſe parts of *Italy*, which lye neere to the Mediterran ſea, by reaſon of maligne vapours raiſed out of the ſea, and diſperſed through the aire.

3 3. Wounds of the head received by perſons who have the Pox, Leproſie, Dropſie, the cough of the Lungs, a Hectick fever, a Conſumption, or ill habit of body, are hardeſt to be cured; partly becauſe the blood is not fit for unition, being corrupt, as in the pox and leproſie; partly becauſe there is not a ſufficient ſtore of it, as in a Hectick, and Extenuation of the body.

4. Wounds

4. Wounds of the head in children prove ſometimes rebellious; partly becauſe they are of a hot and moiſt conſtitution, which is moſt apt to admit putrefaction; partly becauſe the habit of their body is thin, and ſo miniſtreth occaſion to the breathing out of the ſpirits. 4

5. In deadly wounds of the head, the parties live longer in the Winter, than in the Summer: for in it unnaturall heat is not ſo eaſily raiſed as in the Summer. 5

6. If in wounds of the head a ſwelling ſuddenly doth vaniſh away, it is an ill ſigne, unleſſe ſome evacuation hath gone before, or diſcuſſive medicaments have beene applied. 6

7. A fever which invadeth while ſuppuration is procured, that is, before the ſeventh day, is leſſe dangerous than that which invadeth after the ſeventh day: for about that time all accidents uſe to ceaſe. 7

8. If a fever in theſe wounds doe appeare the eleventh or fourteenth day, with a cold and grooving, it is dangerous, becauſe it is to be feared leſt ſome putrefaction hath poſſeſſed the brain, the menings or the skull, which a pale or yellowiſh colour of the wound, or like to water wherein raw fleſh hath beene waſhed, will diſcover. 8

9. Wounds contuſed are more ſlowly cured, than thoſe which are inciſed, becauſe they require greater ſuppuration. 9

10. Symptomes doe ſooner appeare in the Summer, than in the Winter; for in the Summer we looke for them the ſeventh or fourteenth day; and the reaſon is, becauſe in the Summer the humors admit ſooner putrefaction, the unnaturall heat being more readily ſtirred up: *Vide Hippocrat.* 1. *Aphor.* 15. 10

11. It is an ill ſigne if the fleſh of the brimmes looke livid, for that is a ſigne of the decay of naturall heat: See *Hippoc. ſect.* 7. *aphor.* 2. 11

12. If in wounds of the head reaſon faile, if ſpeech ceaſe, if ſight be loſt, if the party labour to tumble out of the bed, when he is not able to move the parts of the body, if he have a 12

continuall fever, if his tongue bee blacke and drie, if the brimmes of the wound be blackiſh or drie, if he have an apoplexie, palſey, with an involuntary excretion of his excrements, or an abſolute ſuppreſſion of excrements and urine, or a phrenſie, or convulſion, then you may pronounce death to attend at the doore.

13 13. Wounds of the fore-part of the head are more dangerous, than thoſe of the hinder part. Firſt, becauſe greater ſtore of braine is contained in the part. Secondly, becauſe the containing parts are thinner there. Thirdly, becauſe the menings have ſinuoſities or cels in the fore-part, but not in the backe-part: wherefore this inequality cannot but endanger the membranes which cover the braine to be offended, if the wound paſſe thorow the skull, or if the trepan be to be applyed. Fourthly, becauſe if wounds of theſe parts bee deadly, hee who hath a deadly wound in the fore-part of the head, dieth ſooner than he who hath a deadly wound in the hinder-part. Fifthly, becauſe more noxious matter may be gathered in the fore-part, which may offend the braine, than in the hinder part, by reaſon of the multiplicitie of the cells. Sixthly, becauſe the fore-part hath more ſutures than the hinder part. See *Fallop. in Hippocrat. de vulner. capitis, cap.* 7. & 8.

14 14. Wounds of the temples are very dangerous. Firſt, becauſe the motion of the joynt of the lower jaw, while we ſpeake, eat or drinke, doth hinder unition. Secondly, becauſe the paſſage of hearing is in the temples: now the inſtruments of the ſenſes are very ſenſible. Thirdly, becauſe veſſels of moment, as the branches of the jugular veines, and ſoporall arts are diſtributed there. Fourthly, becauſe the temporall muſcle is placed in the temple, whoſe offence is not to be neglected. See *Fallop. in Hippoc. de cap. vulnerib. c.* 9.

15 15. A wound in a ſuture is dangerous: Firſt, becauſe the skull is there parted, & ſo more apt to opening than one ſolid bone. Secondly, becauſe in the ſuture there is a ligament, by the which the menings are tyed to the *pericranium*: wherfore a wound

wound being inflicted, there an inflamation may eaſily bee communicated to the menings. *Vide Fallop. in Hippoc. de cap. vulner. c.* 12.

16. Blackneſſe in the parts neere to the wound, a convulſion, palſey, loſſe of appetite, much watching, and the coldneſſe of the extremities of the body, portend an evill event. 16

17. In theſe wounds, if the brims tumifie not a little, it is an ill ſigne, according to *Hippoc.* 5. *aphor.* 66. If the tumifaction be ſoft, it ſheweth concoction; but if it be hard, crudite, *ſecundum eundem* 5. *aphor.* 67. 17

18. Fleſh is eaſily regenerate in all wounds of the head, if you except thoſe wherin there is a fracture of the skul a little above the eye-browes: Three reaſons may bee yeelded for this: Firſt, becauſe in thoſe places there is a cavitie between the two tables of the skull, which paſſeth to the five like bones of the noſe, full of aire, by the which the generation of fleſh is hindered: for if you cauſe him, who hath a wound with a fracture, there to breathe ſtrongly, his mouth and noſthrils being ſhut, the breath w^ch^ commeth out at the wound will blow forth a reaſonable candle held to it. Secondly, becauſe the thickneſſe of the bone will not ſuffer ſo much bloudie juyce to breathe out, as is ſufficient for the generation of fleſh. Thirdly, becauſe there is a great affluxion of excrements to the part, which otherwiſe would bee diſcharged by the eyes and noſe, which hinder the deficcation of the wound, and ſo cicatrization. *Vid. Par. lib.* 10. *cap.* 12. 18

19. In wounds of the head you may hope well, if the patient hath no fever, if hee be in his right minde, if hee finde himſelfe well when he taketh any thing, if hee ſleepe well, and have his body ſoluble, if the wound looke with a freſh and lively colour, if it yeeldeth laudable quittour, and if in fractures the *dura mater* hath its motion free, and bee not diſcoloured. 19

20. In wounds of the head with a fracture, wee muſt not 20

thinke that danger is past before that an hundred dayes bee expired.

21 21. The *callus*, whereby the parts of the skull are united, although it be sooner induced in young, than in old persons, yet most commonly it is procured in the space of fortie or fiftie dayes.

Topicke for assuaging of paine, and hindering inflammation.

The third common point to be observed in wounds of the head, I affirmed to be the appointing of Topickes fit for the assuaging of paine, and the removing and hindering of an inflammation. Sundrie Authors have set downe sundry descriptions of such medicaments, which if one should gather together and set downe, a reasonable booke might be compiled.

Topicks which assuage paine.

To avoid tediousnesse, and not to leave you altogether unfurnished without the description of any such effectuall medicament, I will set downe the receits of such medicaments which will answer your expectation, and ease the patient.

1 The first shall be this: ℞ *farin. hord.* ℥iiij, *posce* ℥vj, *coq. ad cataplasmatis consistentiam: tunc addantur ol. ros.* ℥ij, *at fiat cataplasma s. a. Si deest posca, substituenda in illius locum acetum & vinum rubeum, sumantur partes duæ vini & una aceti: Acetum rosaceum aut sambucinum præstantius est vulgari.* This medicament of *Hippocratis*, *Fallopius* extolleth above all other, *in lectionib. in Hippoc. de capitis vulnerib. c.* 39. Let this medicament be used untill the seventh or fourteenth day, as you shall perceive cause: Then apply other medicaments, whereof I will speak when I come to discourse of the curation of particular wounds of the head.

2 The second shall be this: ℞ *farin. hord. & fabar. an.* ℥ij, *aceti ros.* ℥vj: *coq. ista ad cataplasmatis consistentiam: tum addantur ol. ros.* ℥ij. This cataplasme doth coole, repell, drie, assuage paine, mitigateth the inflammation, and hindereth the affluxion of bloud or hot humors.

3 The third shall be this: ℞ *medullæ panis albi* ℥iiij, *lactis recentis*

centis ℥vj: *cæq. iſta ad cataplaſmatis conſiſtentiam, tandem adde unguenti popul.* ℥ij, *croci pul.* ℈ij. This cataplaſme is effectuall, if the inflammation and paine be great, if the party be of a dry and hot complexion, or bee any way feveriſh. Theſe cataplaſmes are to be applied above the medicaments wherewith the wound is dreſt, the hairy ſcalpe having beene ſhaven for a reaſonable compaſſe about the ſore or wound.

The laſt generall point concerning all wounds of the head, ſet downe by me, was of dreſſing up of the head after the application of the medicaments. In the dreſſing two things are to be obſerved; the covering of the head, and the rowling: As for the covering, a cap muſt be made of a ſoft linnen-cloth, baſted with fine Chirurgeons tow, but not quilted; and it muſt be of that bigneſſe, that it may compaſſe the whole head: it muſt not bee too thicke, too heavie, or too hard; becauſe the head requireth light, ſoft, and eaſie applications; yea, Topickes which are applied to wounds of the head muſt not be ſtubborne, as firme emplaſters, nor too viſcous, becauſe the firſt will cauſe paine, and the ſecond will not eaſily be taken off. Of dreſſing of the head.

As for the rowling, it differeth from the rowling of other parts, becauſe the head is ſomewhat ſpherical or round. Of rowling.

Of the Rowlers, theſe doubts may be propoſed: Firſt, of what matter they ought to be made. Secondly, of what bredth and length they ought to be. Thirdly, of what figure they ought to be: And laſtly, what mediocrity of conſtriction is to be uſed in the application of them. Doubts concerning the rowlers.

As for the firſt, to wit, the matter whereof the rowlers are to be made; it ought to be of flax, and not of wooll, becauſe it would be too hot, and cauſe itching, which inconveniences would trouble the patient. The linnen cloth whereof the rowlers are to be made, muſt not be too new, for then it would bee ſomewhat too rough; nor too old, for then it would be ſubject to tearing: neither ought it to be too thicke, for then it would be heavie and boiſterous; nor too thin, for then it would be too weake.

1

As

2 As for the ſecond doubt, the rowlers ought to be three inches in breadth, and of a fadome and an halfe in length, or of ſuch a length as is ſufficient to compaſſe the whole ſcalp after manifold circumvolutions and rowlings; for the rowler muſt keepe on the locall medicaments, and make ſome conſtriction of the head.

3 As for the figure of the rowlers, they muſt have two ends, that when they meet, they may by mutuall linking be ſtrengthened, and kept from ſlipping.

4 As for the meane of conſtriction to be uſed in applying the rowlers (which was the laſt doubt:) The rowler ought not to be too looſe; for then it could neither keepe to the medicaments, nor any way binde the head: Neither ought it to be too ſtrait, for then theſe inconveniences might follow: Firſt, the pulſation of the arteries would be intercepted. Secondly, fuliginous exhalations could not breathe thorow the ſutures. Thirdly the bloud would bee driven from the wounded part to the menings and the braine, from the outward to the inward parts: from whence would enſue paine, inflammation, a fever, apoſtemation, a convulſion, palſey, apoplexie, and laſt of all death. Neither wonder at this; for *Galen. lib. de faſciis*, relateth that one by too ſtrait deligation of the head, loſt both his eyes; howſoever, great skill and circumſpection is required to dreſſe the wounds of the head artificially.

The inconveniences which follow after ſtrait rowling.

LECT. XVIII.

Of the wounds of the parts placed above the skull.

HAving ſet downe thoſe points which concerne all wounds of the head in generall, I muſt now according to my intention deſcend to the handling of every particular wound of the ſame.

Wounds

Wounds of the head they either offend the parts containing, or the parts contained alſo. The parts containing are either common or proper. The common parts are theſe, the *cuticula*, the *cutis*, and the *panniculus carnoſus*. The proper containing parts are theſe; The *muſcles*, the *pericranium*, and the *cranium*. The parts above the *cranium* are ſubject to theſe offences, a contuſion, a wound, and a contuſion with a wound. The divers kindes of wounds of the head.

A contuſion is cauſed by a heavie and obtuſe, or a blunt inſtrument, as a cudgell, or by a fall from an high place, the head alighting upon ſome blunt body: It is diſcovered by the tumor without a wound, and often a blackneſſe or blueneſſe: If the bloud, by the violence of the contuſion, be powred out betweene the skin and the ſubjacent parts, it is called *Ecchymoſis*. Of a contuſion.

If a contuſion without effuſion of bloud bee preſented unto you, ſhave the haire, and apply this Medicament: ℞ *albumen ovi unius, ol. myrt. & pulv. myrtin. an* ʒ ß. *miſc.* This medicament is to bee uſed untill the part come to its owne temperature and conformation. Dreſſe the partie twice a day: See *Arcæus, lib.* 1. *cap.* 1. The curation of a contuſion.

So you ſee that repelling and aſtrictive medicaments are in this caſe firſt to bee applied: For firſt, by theſe meanes veines and arteries are ſtraitned and cloſed up. Secondly, the defluxion is hindred. Thirdly, the part it ſelfe is ſtrengthned. You may uſe alſo this medicament of *Ambroſe Parrey, lib.* 12. *cap.* 4. ℞ *albumin. ovor. nu*^ro iij, *ol. myrtin. & roſ. an.* ℥i, *bol. Armen.* ʒ ß. *ſanguin. dracon.* ʒii ß, *muc. cupreſ. gall. alum. uſti. an.* ʒij, *aceti roſac.* 9. *ſatis ut paretur linimentum.* If after the paine is gone, and the flux of humors ceaſed, a tumor remaine, uſe diſcuſſive meanes, ſuch is this: ℞ *emplaſt. de mucilag.* ʒij. *oxycroc. & emplaſt. de melilot. an.* ʒj. *ol. chamemel. & anethin. an.* ʒij. *fiat ex his ceratum. ſ. a.* Why in the beginning, repelling and aſtringent medicaments are to be applied to contuſions.

If by the application of theſe medicaments the tumor vaniſh not away, becauſe the effuſion of bloud under the *cutis muſculoſa* hath cauſed a ſeparation of the upper parts from the *cranium*, What is to be done if bloud hath cauſed a ſeparation of the upper parts from the skull.

eranium, which you ſhall diſcerne by the fluctuation of the tumor, and a fix paine in the part: firſt inciſion is to be made; Then if the ſcull be ſound, you ſhall finiſh the cure by moderate compreſſion, and the application of medicaments which drie and mundifie; for moiſt medicaments are not to bee applied to bones, becauſe they cauſe cariofitie: uſe then ſuch a medicament as this is; ℞ *ſyrup. e roſ. rub. ſiccat. & de abſinthio an.* ℥j. *terebinthin.* ℥i ℈. *irid. aloes, myrrh. maſtich. & farinæ hord. an.* ʒ℈. *Miſc. ex præſ. art.* If the skull be not ſound, which you ſhall perceive partly by the ſight, for it will appeare yellowiſh, livid or blacke, partly by the probe, or finger, for you ſhall finde it rugged and uneven, whereas it ſhould bee ſmooth and ſlippery: Firſt, you are to ſmooth it with the raſpatory: then to procure a thin ſcale apply this excellent powder following. ℞ *rad. irid. gentian. ariſtol. rot. dictamni farinæ hord. an.* ʒ℈, *aloes hepat. ſang. drac. myrrh. maſtich. ſarcocoll. an.* ʒij. *fiat ex omnib. pulv. ſ. a.*

The deſcription of the Cephalicke powder.

How we are to proceed in a gangrene.

In great contuſions ſometimes gangrenes enſue, by reaſon of the extinction of the naturall heat, which you ſhall conjecture if the part grow hard, and become to bee of a livid or blacke colour; then thus you muſt goe to worke: Firſt, the part is to be ſcarified. Secondly, cupping-glaſſes or hornes are to be applied. Thirdly, ſuch fomentations and topicks are to be applied, as are preſcribed for a gangrene, whereof I meane to diſcourſe in a particularity, when I have made an end of fractures and luxations; for it is a ſymptome, which moſt commonly accompanieth ſolutions of unity of all ſorts. It ſhall ſuffice to have ſpoken ſo much concerning a contuſion of the parts placed above the skull, now it followeth that we diſcourſe of wounds of the ſame parts.

Of wounds of the parts placed above the skull.

Wounds then in the parts above the skull are two ſorts: for in ſome of them the skull is not laid bare, and in ſome of them it is bared. You ſhall know that the skull is not bared, partly by the finger, if the wound bee large enough, partly by the probe, if no hard ſubſtance can be felt, and if the probe ſlip and ſlide, meeting with the *pericranium*. As for ſuch wounds,

wounds, the obſervations which I ſet downe in the point concerning the generall curation of wounds, will ſuffice for the curing of theſe.

Wounds of the temporall muſcle.

Nevertheleſſe, the wounds in the temporall muſcle require a ſpeciall conſideration, by reaſon of the fearfull ſymptomes, which enſue ſometimes after it is wound. The temporall muſcle then may be wounded three manner of wayes: Firſt, by a puncture: Secondly, by being divided tranſverſly: And thirdly, being wounded according to the length.

Of a puncture and a tranſverſe wound of the temporall muſcle.

If the puncture be deepe, or the tranſverſe wound in like manner, it is a dangerous wound, and ſo to bee accounted by the Chirurgeon at the firſt, leſt his ſecuritie bring unto him diſcredit, and fruitleſſe repentance at the laſt: for ſuch wounds bring vomiting, a convulſion, and deepe ſlumbering, according to *Fallop. in Hippoc. de cap. vulneribus, c. 9.* The temporall muſcle being cut athwart, it loſes its proper action, which is to move, and lift up the lower jaw; and then the oppoſite temporall muſcle, being ſound and whole, uſing its ſtrength, the wounded muſcle not being able to uſe any reſiſtance, it draweth the lower jaw to it; whereby the mouth and all parts of the face are drawen awry, and ſuffer a convulſion towards the ſound part, the other being reſolved and falling; for as often as the muſcles of one kinde are equall in number, bigneſſe and ſtrength on each ſide, the reſolution of the one part cauſeth the convulſion of the other. Beſides this, when we eat or ſpeake, this muſcle is in perpetuall motion: whereby it commeth to paſſe, that being once cut, it hardly will admit unition and the ſcaly ſuture; *ſutura ſquamoſa*, which is the joyning of the *oſſa petroſa*, or ſtony bones ſo called * from their hardneſſe. If therefore there be a puncture in this muſcle, let not the Chirurgeon be too haſtie to dilate it by inciſion for the reaſon above ſpecified; but let the haire be ſhaved, and the wound dreſſed with the oyle of *Hypericum*, and the oyle of earth-wormes mingled together with ſome ſpirit of wine, all being made warme. Take two parts of the oyle of *Hypericon*, and one of *oleum lumbricorum*. If the

* Maketh the wound dangerous.

temporall muſcle be tranſverſely cut, then the brimmes are to be brought together by uſing ſtitchings in the skin. Afterward dreſſe either with the medicament preſcribed in a puncture, or with *Arcæus* liniment melted: Above theſe wounds apply *Paracelſus* his ſticktick emplaſter, or *diachylon magnum*, brought to the conſiſtence of a cerat, by diſſolving of either of both in ſome good and approved artificiall vulnerary Balſame. Although the wounded party be like to die, yet according to *Celſus* his counſell, the miſerable patient is not to be altogether left comfortleſſe; for it is better to trie a doubtfull medicament, than none at all: you may avoid ſcandall to the profeſſion, and free your ſelves from diſcredit, by acquainting his friends, or whom it moſt concerneth, with the danger wherein he lyeth.

Of a wound according to the length.

If the temporall muſcle bee wounded according to the length, then when you are called, you are to performe two offices: Firſt, if the hemorrage bee of moment, then you are to ſtay the bleeding, and then you are to unite the brims by ordinary ſtitching: If the bleeding will not be ſtayed by the application of ordinary meanes, (whereof I have ſet downe ſome choyce in a proper place) then you are to paſſe a needle thorow the muſculous fleſh into the wound, and from thence to the outward part of the wound, compaſſing the great veſſels with the double threed in the needle: Betweene the threed and the veſſels you are to put a little doſill of lint, to ſhun the cutting aſunder of the parts compaſſed with the threed, and to avoid paine: This being done, caſt a decent knot upon the threed. Before you ſow the wound, firſt cleanſe the wound from the grumous or clotted bloud, and all extraneous bodies, and then ſow it, leſt the part wounded be cooled by the aire, and a convulſion doe enſue: when you have dreſſed the partie, let his head be raiſed ſomewhat high with a pillow.

The manner of curing of wounds of the parts above the skull, wherein the skull is laid bare.

It followeth now that I ſpeake of the wounds of the parts above the skull, wherein the skull is detected or laid bare. In theſe wounds the skull is either not hurt, or hurt. If the skull be

be not hurt, the wound may be cured two manner of wayes: to wit, by agglutination, or by incarnation: If you meane to cure the wound by agglutination, thus goe to worke: Firſt, ſtitch the wound according to art: then apply pledgets moiſtned in the white of an egge. The next day anoint the brimmes of the wound with *Arcæus* his liniment, or ſome good Balſame warmed in a ſpoone, uſe neither tents nor pledgets, for theſe hinder conſolidation. If the wound yeeld much quittour, dreſſe it twice a day, untill the quittour abate; continue this manner of dreſſing untill the wound be agglutinate, which will fall out ſometimes the fourth, ſometimes the ſixth day: See *Arcæus*, *lib.* 1, *cap.* 1. If you intend to cure ſuch a wound by incarnation, or filling of the ſolution of unitie by engendring new fleſh: Firſt beſprinkle the bone with the Cephalick powder, ſet downe by mee before, page 130. Secondly, apply drie pledgets: Thirdly, fill up the wound with ſome ſarcoticall unguent, as *Aureum*, *Baſilicum*, or *Arcæus* his liniment. It is farre better to cure ſuch wounds by agglutination, than by incarnation, for the ſcarre will be leſſe, and the cure will be finiſhed in a ſhorter time.

What is to be done if the skull be hurt.

If the skull be hurt, it falleth out three manner of wayes: Firſt, if it be made extraordinarily dry by reaſon of the aire, which will fall out, if the skull lye bare two houres. Secondly, if the upper portion of the *cranium* bee divided from the lower, and cleave to the *cutis muſculoſa*: Thirdly, if both the tables of the skull be cut, and cleave to the *cutis muſculoſa*, not ſeparat altogether from the parts adjacent. If the skull hath become drie ſuperficially only, which you ſhall perceive if it bleed not, being ſcraped with a raſpatory; this upper ſuperficies is to bee removed with the raſpatory, that bloud may come from the ſound bone: then the wound is to bee ſtitched, and the curation to be performed by agglutination. If only a portion of the *cranium*, ſeparat from the reſt, ſticke to the *cutis muſculoſa*, it is to be taken away, and the wound to be cured either by agglutination, or concarnation, as you

ſhall ſee cauſe. If a portion of the whole *cranium* be divided from the reſt, ſo that the *Dura mater* doth offer it ſelfe to the view and ſtick to the *Cutis muſculoſa*, that portion is not to bee ſeparated from the *Cutis muſculoſa*, leſt the braine bee deprived of its cover: but to bee reduced into its place, and there kept by bringing together the brims of the *Cutis muſculoſa* with ſo many deep and ſtrong ſtitches as ſhall ſuffice.

A Hiſtory.

I cured a Warrenner of Maſter *Hollends* of the Verdry, thirty two yeeres agoe, of ſuch a wound, by theſe meanes within a few dayes. Bones of the head will ſuffer unition being ſeparate, as well as bones of other parts of the body.

Of the curing of a wound with a contuſion in parts above the ſcull.

At the laſt I am come to the third kind of wounds, which happen to parts placed above the *cranium*, which is a wound with a contuſion. Of this ſort of wounds there bee two kinds: For either they are ordinary, or extraordinary. Theſe I call ordinary, which are not accompanied with ſtrange ſymptomes: Such wounds thus you ſhall dreſſe. Firſt, you ſhall waſh and foment the wound with the ſpirit of Wine, having drawne into it ſelfe the tincture of myrrhe, and frankincenſe: Then if the wound be great, ſtitch it with needles: If it bee not great, a dry ſtick will ſerve. Dreſſe the wound either with *Arcæus* his linament, or ſome good artificiall vulnerary balſam warmed. If the wound be deep, a tent muſt bee kept in the depending part untill it yeeld laudable quittour, and then it is to bee taken out: Then an emplaſter is to bee applyed: *Emplaſtrum de gratia dei* will ſerve the turne.

An extraordinary wound is ſuch a one as is accompanied with ſtrange, and unaccuſtomed ſymptomes: ſuch are a fever, an inflammation of the whole head, neck, and ſhoulders; as alſo the breſt: the brims of the wound ſwell much, and are of a livid colour. The wound caſteth forth a virulent, ſharp, black, and ſtinking ſanies. The party feeleth a great and prick-

pricking paine: Such accidents commonly enſue after the bitings of men or beaſts, which impreſſe a malignity into the wound.

The intentions curative of a contuſed wound with a malignity.

In ſuch a caſe two things are to be done: Firſt of all the malignity is to be drawne out. This is performed by ſcarifying deeply the brims of the wound, and then applying either leeches or cupping glaſſes. Then the wound is to be waſhed and fomented with this medicament: ℞ *Theriac. Androm.* ʒij. *Mithridat.* ʒj. *aq. card. benedict.* ℥ij. *aq. vit.* ℥j. *miſc. ex art.* let medicament be applyed hot. With all the medicaments wherewith you dreſſe ſuch wounds, mingle ſtill ſome triacle and mithridat, untill all the afore ſpecified ſymptomes ceaſe, and the wound yeeld a laudable quittour: Then finiſh the cure with ordinary medicaments.

Secondly, in ſuch wounds you are to ſtrengthen the principall parts, (that they may bee the more able to repell all maligne vapours) with cordiall medicaments. Take this as a paterne: ℞ *Theriac. amdrom.* ℈ij. *Mithridat.* ℈j. *conſerv. roſ. rub. & buglo ſſ. an.* ʒß. *aq. oxalidis minoris* ℥iii. *Miſc. ut fiat potio.* In miniſtring the internall medicaments you muſt have a care of the age and ſtrength of the patient. You muſt not forget to apply to the region of the heart cordiall epithemes Let this be an example: ℞ *aq. roſ. rub. & nenufaris an.* ℥iv, *acet. ſcyllit.* ℥i. *coral. rub. ſant. alb. & rub. roſ. rub. pulverizat. an.* ʒi ß. *flor. cordial. pul.* torem *pug.* ij. *eroci* ℈i. *Mithridat. & Theriac. an.* ʒi. *miſc.* Apply double cloaths wet in this medicament to the region of the heart.

LECT.

LECT. XIX.

Of the generall points to bee obſerved in wounds of the Scull.

IN my laſt Lecture I delivered unto you the method of curing ſuch wounds as may happen in thoſe parts which are placed and lye above the Scull; now I am to ſhew how ſolutions of unity in the *cranium* or the Scull it ſelfe are to be handled. A ſolution of unity in the ſcull is by all practicers called a fracture by a peculiar denomination.

The points to be handled in a fracture.

In this buſineſſe according to my accuſtomed manner of proceeding, I will firſt ſet down the things which are common either to all or moſt fractures, and then thoſe things which are to be performed in every fracture in ſpeciall. The things common are two, to wit, the ſignes of a fracture, and the preſages.

Of the ſignes.

As for the ſignes, they are either found out by the ſenſe, or conjectured by reaſon.

1. From the ſenſe.

The ſenſe (if the fracture bee not preſented to the view at the firſt) doth find out a fracture by two inſtruments, to wit, the finger, if the wound be large enough, and a probe. If then you perceive either by your finger or a probe an inequality, depreſſion or ruggedneſſe in the ſcull, you may ſuſpect that there is a fracture. Ruggedneſſe may deceive you if the ſutures of the wounded party doe vary from the ordinary, as if the ſagitall ſuture doe reach to the *Oſſa cribriformia* or five-like bones of the noſe. Some idiots imagine the ſculs of women in this point to differ from the ſculs of men, but their imagination is erroneous: for this event is rare in either of both. That the ſuture may deceive one, *Hippocrat. Sect. 6. de*

de vulnerib. capitis, acknowledgeth in theſe words: The ſuture may deceive, being rougher than the reſt of the bone. So that it is not manifeſt whether there is in that place a ſuture, or the print of the weapon, unleſſe this be left ſomewhat large.

As for the ſignes which are found out by reaſon, or rationall conjecture, they are taken from foure things: to wit, Firſt, from the efficient cauſes. Secondly, from the manner of wounding. Thirdly, from the wounded perſon. And laſt of all from the ſymptomes. 2. From reaſon.

To the efficient cauſe are referred, firſt the party who hath inflicted the wound. So that if he be ſtrong, and in his fury did inflict the wound, it is likely that there is a fracture, if the wound hath reached to the ſcull. Secondly, the inſtrument is to be referred to the efficient cauſe, whoſe keenneſſe and weight are to be conſidered. Thirdly, a fall upon a hard body from a high place. Fourthly, a ſtrong daſhing of the head againſt a hard body.

As for the manner of wounding, it is to be conſidered whether it was done violently, or moderatly: For if the wound was inflicted violently, it is probable that a fracture was procured; but if it was done with deliberation and moderation, there is leſſe feare of a fracture. As for the ſignes taken from the wounded party, you are diligently to conſider; Firſt, whether he received the wound being bare headed. Secondly, whether the ſcull be thin and weake, as it is in children, and ſo apt to receive a fracture. As for thoſe ſignes which are taken from the ſymptomes, they are of two ſorts: for they are taken either from the ſymptomes conjunct, or thoſe which after enſue.

The ſymptomes conjunct are theſe: 1. A ſinging of the eares after that the wound is received: 2. Falling after the blow: 3. Swooning for a time: 4. Slumbering after the wound is received: 5. A dazling of the eyes: 6 A giddineſſe. 7. An iſſuing of bloud from the noſe, eares, eyes, or

mouth. 8. Vomiting, peruſe *Hippoc. lib. de vulner. cap. ac Fallop. in eundem c.* 18. *Paræum lib. 9. c.* 2.

The ſignes which are fetched from the after following are theſe: 1. A conſtant paine of the wounded part, ſo that the patient often offereth to touch it with his hand: 2. A vomiting of choler with a fever: 3. A convulſion: 4. A palſie of one of the armes and legs: 5. Raving: 6. A faltring in the ſpeech: 7. Deafneſſe: 8. The empairing of the memory: 9. Dulneſſe of the underſtanding: 10. Weake judgement. *Coiter. lib. obſerv. Anatomic. & Chirurgicar. Fallop. in Hipp. de vuln. cap. c.*45. 11. An apoplexy, *Par. lib. 9. c.* 8.

De Coac. prænot. Thoſe ſignes which are taken from the craſhing which *Hippoc.* affirmeth the patient to feele, if he chew paper ſtrongly with both the ſides of the gums, and from holding of a pack-threed ſtrongly between the teeth, if after girking of it the party wounded feele paine in the part: as alſo thoſe ſignes which are taken from the moyſture of emplaſters, applyed to the wounded part ſhaved, are all uncertaine. See *Fallop. in Hippoc. lib. de vuln. cap. c.* 23. But if the hayre be cut aſunder, and ſtick up in the wound, the ſcull of a neceſſity muſt bee hurt; for they could not bee cut aſunder without the reſiſtance of the ſcull. See *Hipp.* in his former booke, and *Fallop.* upon him, *cap.* 18. *& Parrey lib. 9. c.* 8.

The prognoſticks in fractures.

It is ſufficient to have ſpoken ſo much of the ſignes of fractures of the ſcull, now I will deliver unto you the prognoſticks, by the which you ſhall bee inſtructed to foretell the event which is like to enſue after a fracture procured in the ſcull.

1 1. If one hath received a fracture in the ſcull, pronounce not all danger paſt before 100. dayes bee expired; for many ſuch wounded perſons by experience have beene found to have dyed about this time, when as all things might have beene thought to be ſecure. See *Parrey lib. 9. c.* 13. *& Fallop. in Hipp. de vulner. cap. c.*48.

2 2. Every wound of the head accompanied with a fracture

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is dangerous, although no fearfull ſymptome doth at the firſt for many dayes appeare and diſcover it ſelfe: for the ſtrength of the party, the cleanneſſe of the body, an exquiſit dyet, and the wholeſomneſſe, and temperatneſſe of the climat, are able to ſtay for a long time the appearing of ill accidents.

3. If a fever enſue, after a fracture; if the head become very hot, if it hath beene ſubject to diſtillations, if the party hath often beene troubled with an *Eryſipelas*, pronounce danger: If the brims of the wounds in the ſecond dreſſing grow flat and doe not ſwell, there is yet more danger: But if the ſcull at the very beginning of the cure appeare blackiſh, and the patient having a cacochymicall body cannot ſleep, death is like to enſue. See *Fallop. in Hipp. de vuln. cap. c.* 24. 3

4. When the reaſon is weake, the memory is impaired, the tongue faltereth, the eyes grow dimme, the eares become deafe, if the party either cannot move himſelfe, or falleth ſtill from the head of the bed, when a continuall fever with raving holdeth the patient; if either the tongue grow black, or clefts or puſtules appeare upon it; if the wound grow dry, and yeeld no quittour, or becometh of a livid colour; if the excrements be ſuppreſſed; if a convulſion, palſey or apoplexie doe enſue; if the wounded party often faint and have a weake pulſe; If (I ſay) all theſe ſymptomes, or moſt of them doe appeare, you may boldly prognoſticat that death will enſue. Theſe ſymptomes if they ſhew themſelves even quickly after that the wound is received, they ſhew that the ſubſtance of the braine it ſelfe is hurt: But if they appeare about the fourteenth day or after, they proceed from the inflammation of the braine, and a phlegmone of the ſame, by reaſon of the powring of putrified bloud upon it. See *Parey lib.* 9. 12.

5. If one who hath received a fracture of the ſcull be altogether voyd of a fever, if hee digeſt his meat well, if hee ſleep well, if the excrements be diſcharged, no wayes offending in colour, quantity, time, other qualities, and the manner of diſcharging: If the wound appeare of a freſh and lively co- 5

lour, if it yeeld laudable quittour, if the lips of it ſwell a little, and be ſomewhat ſoft, if the motion of the *dura mater* be regular, you may hope well of the recovery of the patient, *Parey lib.9.c.13.*

6 6. If the ſcull bee fractured, the parts above muſt ſuffer a ſolution of continuity, onely this exception is to bee admitted, if that kind of fracture fall out which is called *reſonitus* or *contrafiſſura*, a countercleft, which ſeldome happeneth, whereof I will ſpeake when I ſhall deliver the manner of curing particular fractures. *Vide eund. lib.9.c.10.*

7 7. If much quittour appeare upon the *cranium* fractured, if puſtules appeare upon the tongue, by reaſon of a ſharp *ſanies* falling upon it, having beene ſent downe from the braine through the holes of the pallat of the mouth, there is ſmall hope of recovery, eſpecially if theſe accidents continue, and ceaſe not. *id. ibid.* for theſe doe ſhew that the braine it ſelfe is ill affected.

8 8. If the fleſh about the ſcull fractured doe appeare of a leady colour, it is an ill ſigne, according to *Hippoc. 7. aph.2.* for it is an argument that the naturall heat of the part is extinguiſhed, by reaſon of a maligne humour, which hath cauſed a putrefaction of it, or that it is quenched by a vehement inflammation or phlegmony: If it hath not fallen out by reaſon of the greatneſſe of the contuſion, if it become of a leady colour by reaſon of the contuſion, it is not ſo dangerous, for it may bee removed by ſuppurative medicaments.

9 9. If in like manner the fleſh about the ſcull fractured be of a black colour, become dry, and afford not quittour according to the amplitude or largeneſſe of the wound, it promiſeth no good: for it is a ſigne of the mortification of the part.

10 10. The nowle bone, and the *Os petroſum*, or ſtony, or hard bone, behind the eares, are leſſe ſubject to injuries, and ſo if they be wounded or fractured, the danger is the leſſe: Firſt, becauſe the nowle bone doth onely containe the *cerebellum*,

bellum, which is not ſo noble as the braine. Secondly, becauſe leſſe ſtore of braine is contained in thoſe places, than in other parts of the ſcull. Thirdly, becauſe the bones in theſe parts are thicker. Fourthly, becauſe they are more firmly covered, for the skin in them is thicker, the fleſh more plentifull, the chords more in number, and the ligaments ſtrong to ſtrengthen the bones.

11. The callous fleſh by the which the portions of the ſcull ſeparate, are joyned together and united, doth require the ſpace of 40. or 50. dayes for the ſtrengthning and hardning of it. Yea the age and temperament of the wounded party have great force in haſtening and ſtaying the confirmation of the ſame. See *Parr. lib. 9. c.* 13. 11

12. Why ſome eſcape of grievous wounds, and ſome dye of light wounds, it falleth out by reaſon of the differences of parts wounded: for ſome are more ſenſible than others. Secondly, by reaſon of the diverſities of bodies: for ſome are ſtrong, ſome weake. Thirdly, by reaſon of the diverſities of the ſymptomes: for in ſome wounds, the ſymptomes are more mild, in ſome more fierce and fearfull. See examples in *Hippocrates lib. 7. Epidem.* peruſe *Bernhardus Suevus*, in his Treatiſe *de Vulneribus cap.* 2. Where you may read ſundry examples of thoſe who died of very ſmall hurts, and of ſundry who eſcaped of grievous wounds. 12

13. The progreſſion or order of the ſymptomes afore mentioned is this. Firſt, paine is cauſed by reaſon of the ſolution of unity. After paine follow watching, loſſe of appetit, weakneſſe: Paine cauſeth affluxion of humours: Affluxion of humours cauſeth inflammation: Inflammation procureth a fever, ſometimes a convulſion, ſometimes a gangrene, and laſt of all a mortification, if prevention bee not uſed. 13

14. Wounds with a fracture of the *ſinciput*, or bone of the forehead are more dangerous than thoſe of the *occiput*, or nowle bone. Six reaſons may be yeelded for the confirmation of this preſage. Firſt, becauſe the bones of the fore- 14

head are thinner than thoſe of the *occiput*, and weaker, and ſo may be more eaſily contuſed or fractured. Secondly, becauſe moſt braine is there contained. Thirdly, becauſe in the bone of the forehead there are ſundry vaultings, ſo that the braine may eaſily be wounded, if it paſſe through both the tables of the ſcull. Fourthly, becauſe the skin in this part is thinner than in other parts of the hairy ſcalp: ſo that the bones and the menings may the more eaſily be hurt. Fifthly, becauſe there are many and large veines in the forehead, ſo that the greater hemorrage may there be procured. Sixthly, becauſe in the forepart of the head there are two ſutures, *Coronalis*, and *Sagittalis*: So that the ſcull may there eaſily be fractured, and the *dura mater* hurt, which ſendeth filaments through the ſutures to make the *pericranium*.

15 15. Next to theſe the parietall or *Oſſa temporum* are moſt dangerous. Firſt, becauſe theſe bones are thin and weake. Secondly, becauſe there are remarkable veines, arteries, and nerves. Thirdly, becauſe the *pericranium* doth clip the temporall muſcle, and the muſcle it ſelfe hath in the middle a tendon of exquiſit ſenſe. So that the wounds in the ſides of the head may by conſent offend the menings, braine, and ſinewes ſpringing from thence.

16 16. Wounds without or with a fracture in the ſutures, are moſt dangerous. Firſt, becauſe the bones are not ſolid there, but divided, and ſo leaſt able to reſiſt injuries. Secondly, becauſe quittour bred there may eaſily fall upon the menings. Thirdly, becauſe in the ſutures the *dura mater* may promptly be offended, which ſendeth filaments through them, for the framing of the *pericranium*.

You ſee that I have taken ſome paines in ſetting downe the predictions in fractures of the ſcull, to make you circumſpect in your proceedings, that you may eſcape fines: Of what moment certaine predictions are, I will acquaint you with *Hippocrates* his words, *lib.* 2. *prorrhet.* I adviſe you that you carry your ſelves wiſely in every point of the art, and in preſaging part alſo, and that you call to mind, that if the e-

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vent fall out according to the prediction, you ſhall be had in admiration with the patient; but if you doe erre, you ſhall bee both deſpiſed, and accounted fooles. Wherefore I command that you uſe diſcretion in theſe predictions.

LECT. XX.

Of the Section of the hayrie Scalp, and opening of the Scull.

HAving diſcourſed of the two generall points to be obſerved in wounds accompanied with a fracture of the ſcull, which were the ſignes and prognoſticks; hereafter I am to ſhew how every ſort of ſuch wounds in particular is to be handled, according to art. Now the primary difference of fractures of the ſcull, is taken from the ſubjects, which are the wounded parties. Theſe are either children which have not paſſed the ſeventh yeere of their age, or thoſe of mature and ripe age.

Fractures in children.

Fractures then of the *Cranium* in children are either without a wound, or they are accompanied with a wound. If they bee without both a wound, and a fearfull ſymptome, thus you ſhall goe about to cure them. If then the *cranium* bee depreſſed, and blood expreſſed out of the veines, doth wave up and downe under the skin when it is compreſſed, (which ſometime falleth out in hard labour when the midwife doth deale roughly with the woman that is to bee delivered) firſt of all the haire is to be ſhaven off: then a triple or foure-fold ſoft linnin cloth, well moyſtned in the oyle of roſes, mingled with the whites of egges beaten, and a little vinegar is to be applyed to the part: which muſt not bee removed before 24. houres be expired. In the ſummer time apply this medicament cold, but in the winter time warme; for

How a fracture without a wound is to be cured.

for by this meane the afflux of humours will be ſtayed, and a part of thoſe which have flowed already to the part diſcuſſed. After this untill the eleventh day, this cataplaſme is to bee applyed warme: ℞ *roſ. rub. baccarum myrti an.* ℥ij. *farin. hord. & fabar. an.* ℥j. *abſynthii & beton. an.* ℥ß. *ſemin. cumin.* ℑij. *pulverizandis pulvis coq. omnia in vini rub. aſtringentis* ℥xij. *ad Cataplaſmatis conſiſtentiam, tandem addantur ol. roſ. ac chamæmelin. an.* ℥j. *mellis* ℥ij. *ut paretur cataplaſma ex A. P.* It muſt be applyed warme, and freſh, morning and evening. It muſt bee applyed large enough, that it may cover ſomewhat of the parts adjacent. In the application let this moderation bee uſed: Apply not too little of it, leſt it grow too dry, nor too much, leſt it offend the affected part with the weight. From the eleventh to the twentieth day, apply *diapalma* ſoftned with ſome oyle of lilies, taking iiij. ℥. of the emplaſter, and one of the oyle: From the twentieth day untill the curation be performed, apply the ſtiftick emplaſter relented in the oyle of camomill, taking the afore ſpecified quantity of the emplaſter and oyle.

Cæſar Aromitius in lib. Hippoc. de vulner. cap. & Arcæus lib. 1. *c.* 5. doe adviſe us to dreſſe childrens heads in this caſe after this manner: for the firſt dreſſing they will have this medicament to be uſed, ℞ *farin. hord. & fabar. an.* ℑiij. *pulv. baccar. myrti* ℥ß. *aceti* ℥ij. *coq. at cataplaſmat. conſiſtent. tum adde albumen ovi unius una cum vitello conquaſſata, ol. roſ. & myrtin. an.* ℑij. *miſc.* Afterward they will have to be applyed a cerot made of wax, honey, *lapis hæmatites*, cumin ſeeds, wormwood, the pumick ſtone and branne beat to powder. But in ſtead of this you may uſe *Diachylon magnum* relented in the oyle of lilies: theſe medicaments are to be applyed as the former.

How a wound with a fracture in children is to be cured.

If there be a wound with a fracture, but no fearfull ſymptome, *Arcæus* will have no ſhiver or part of the *cranium* to be taken, if the portions of it cleave together; but onely the fracture to bee anoynted with his liniment warmed, and applyed by three or foure feathers ſtripped untill you come within an inch of the points of them, and tied together with

a threed. If fearfull ſymptomes, as a convulſion, a fever, vomiting of choler, or a palſey, &c. doe appeare, which ſhew an offence to be communicat to the braine by the *cranium*, then it is requiſit that the ſcull be opened. *Vide Lang. ep.* 5. *tom.* 1. *& Fallop. in Hippoc. de vuln. cap. c.* 47.

The ſcull being opened, children are no other wayes to bee dreſſed than men are. How they are to bee dreſſed I will ſhew hereafter; it ſhall ſuffice then to have ſpoken ſo much concerning the curation of fractures in the ſculs of children.

How fractures in perſons of ripe age are to be cured.

Now I will declare unto you how theſe are to bee cured in perſons of ripe age. In handling of this matter, I will ſet down two points. The firſt ſhall containe thoſe things which are common to every kind of fracture. The ſecond ſhall deliver thoſe things which are proper to every ſort of fracture. Thoſe things which are common are two: The firſt is the ſection of the ſoft parts placed above the ſcull. The ſecond is the opening of the ſcull.

Of the ſection of the ſoft parts above the ſcull.

As for the firſt, it is an artificiall ſeparation of the ſoft parts above the ſcull, that wee may come to dreſſe the ſcull fractured, to prevent the comming of ill accidents, or to remove ill ſymptomes preſent. Of this Section theſe things may be demanded. 1. Whether it ought to be done. 2. Why it is to be done. 3. In what parts it is to bee made. 4. Of what forme it ought to be. 5. What is to be done after Section.

Why ſection is to be made.

As for the firſt, three reaſons may induce us to adminiſter it ſometimes. 1. The authority of *Hippoc. in li. de Vulnerib. c.* and of all other rationall Phyſitians, and Chirurgeons. Secondly, neceſſity it ſelfe: for if either bloud or quittour deſcend to the menings or braine, inevitable death will enſue, if way bee not made for the expurgation of them, by making inciſion in the ſoft parts, and opening of the ſcull it ſelfe. The third reaſon is dayly experience, which ſheweth by the death of ſundry, who by reaſon of the omiſſion of theſe operations end their lives, that they are to be adminiſtred.

The cauſes moving.

The cauſes which admoniſh us, that ſection is to be adminiſtred are two. Firſt, that the *cranium* may be diſcovered, if dangerous ſymptomes doe appeare, that the Chirurgeon may ſee whether it be hurt or no. Secondly, that way may be made to remove ſuch things as offend the menings and braine, as bloud or quittour ſetling upon them, and preſſing them downe, as alſo peeces of the inſtruments wounding, or portions of the ſcull wounding or pricking theſe parts.

The places of Section.

As concerning the places wherein ſection is to be adminiſtred ſafely, receive this propoſition: Section may be made in all parts of the hayrie ſcalp, if you except the ſutures and the temporall muſcle.

Why ſection is to be made in the ſutures.

For firſt, Section is not to bee made in the ſutures: becauſe thoſe filaments, by the which the menings are tyed to the *peticranium*, are of an exquiſit ſenſe, and being torne, may be inflamed, and communicate the inflammation to the menings and braine. See *Hippoc. de Vulner. cap. & Fallop.* upon him, *cap.* 19.

Why ſection is not to be adminiſtred in the temporall muſcle.

Secondly, Section is not to be made in the temporall muſcle, but chiefly a tranſverſe inciſion.

Firſt, becauſe a reſolution of that ſide of the head, which is wounded is cauſed, and a convulſion of the other ſide. By the which an ugly diſtortion of the parts of the face is cauſed. The cauſe of this ſymptome is this; Whenſoever one of the two brotherly muſcles, appoynted for ſundry motions of the ſame part is tranſverſly wounded, that which is wounded, muſt ſuffer a reſolution, and that which is not cut a Convulſion.

Secondly, we muſt be wary in inciſing the temporall muſcle tranſverſly; becauſe it is ſtill in motion when we talk, drink, or eat.

Thirdly, becauſe the *Sutura ſquamoſa*, or the ſcaly future lieth under it; but it wanteth not danger to make inciſion in the future, as hath beene ſaid.

Fourthly, ſeeing many veines, arteries, and nerves are ſpread through it, it being tranſverſly cut, many grievous ſymp-

ſymptomes muſt enſue, as a great hemorrage, paine, an inflammation, a fever, a convulſion of the inanition, the veſſels appointed for the containing of the vital and animall ſpirits; to wit, the veines, arteries, and ſinewes being tranſverſly cut aſunder. *Vide Par. lib. 9. c. 19. Fallop. in Hippoc. de vulner. cap. c. 38.* As for the forme of Section, it is either ſtraight, triangular, or croſſe wayes.

Why tranſverſe incision is not to be made a little above the eye-lids.

One thing here is to be obſerved, that we make no tranſverſe inciſion a little above the eye lids, leſt the frontall muſcle being tranſverſly cut aſunder, a palſey of the eye lid doe enſue, the muſcle not being able to elevate or lift it up, wherof the inciſion in theſe places muſt be either ſtraight, or oblike, not tranſverſe. See *Fallop. in Hippocrat. lib. de vulnerib. cap. c. 23.*

What is to be done after that inciſion is made.

Now this remaineth, wherewith you are to be acquainted, that I ſhew unto you what is to be done after that inciſion of the ſoft parts is performed.

Why the *pericranium* is to be ſeparated from the *cranium*.

Firſt of all, the *pericranium* is to be ſeparated from the *cranium*, either with the nailes or the ſplater: you are to begin the ſeparation from the points of the inciſion.

If the *pericranium* bee not ſeparate, it will procure great paine, an inflammation, yea, and a fever, if it be torne either with a raſpatory or trepan. See *Par. lib. 9. cap. 4. Fallop. in Hippoc. de vulnerib. cap. c. 38.*

Secondly, the brimmes of the inciſion are to be kept aſunder by doſils and pledgets of lint, armed either with a medicament apt to ſtay bleeding, if it offer to flow plentifully, or only with the white of an egge beaten, according to *Aretæus, lib. 1. cap. 4.* or with both the white and the yolke, to aſſwage paine, according to *Fallop. in Hip. de vulner. cap. c. 29.* if there be no feare of any remarkable effuſion of bloud. The wound ſo dreſſed muſt not be dealt withall, untill foure and twenty houres be expired.

Of the opening of the ſkull.

Having delivered unto you thoſe points which are conſiderable in making inciſion, to come to fracture; now I muſt ſet downe thoſe things which are to be noted, when the ſkull

is to be opened artificially with fit inſtruments, that you may come to remove ſuch things as may offend the menings, and the braine. Of this operation theſe things may bee asked: Firſt, why it is to bee opened: Secondly, when it is to bee opened: Thirdly, what quantitie of it, is to be taken away, when it is to be opened: Fourthly, with what inſtruments it is to be taken away.

Why it is to be opened.

As for the firſt, the *cranium* is to bee opened in five caſes: Firſt, that peeces of the weapon may be taken away: Secondly, that a portion of the skull may bee removed, which is altogether ſeparat, or offendeth the menings, if it cleave to the reſt: Thirdly, that a part of the skull depreſſed, which beareth downe the menings, and cauſeth a ſtupidity, may be either reduced to its own place, or wholly taken away: Fourthly, that either coagulate bloud, or quittour may be removed, which have fallen upon the membranes, by reaſon of a breach of ſome veſſell. Fifthly, that way may be made to apply convenient medicaments to the fracture: See *Fallop. in Hippoc. de vuln. cap. c.* 31. and *Parr. lib.* 9. *c.* 4.

When it is to be opened.

As concerning the ſecond, it is good to open it before the fourth day: *Fallop. ibid. c.* 34. and *Arcæus, lib.* 1. *c.* 4. and *Parr. lib.* 9. *c.* 4. Yea, it may with good ſucceſſe be opened after the ſeventh day, both in Summer and Winter ſeaſon, if grievous ſymptomes urge not. If therefore any one of you be called to one who hath a fracture in the *cranium* on the fourth day, (if ill ſymptomes will permit) you may deferre the opening untill the ſeventh day be paſt; yea, the ninth, for on the fourth day the putrefaction of the humors beginneth, as alſo the inſult of nature againſt the diſeaſe, and ſo it is not good to hinder the motion of nature: But if for reaſonable cauſes you feare leſt delay will breed danger, you are preſently to open the skull, even on the Criticall day.

What quantity is to be taken away.

As concerning the quantitie which is to be taken away, either the whole fractured bone is to be taken away, or only a part of it. The whole bone is to be taken away: Firſt, if the fracture be in an upper part, as the crowne of the head,

where

where no depending vent may bee made to diſcharge the bloud or quittour from the menings. Secondly, in a fiſſure, or ſedes, if it be not wide enough, the whole bone that you ſee is to be removed, at the leaſt to the ſecond table. Thirdly, all the ſhivered bones which cleave not together are to be taken away. Fourthly, ſo much of the skull is to be taken away, as covering the *dura mater* becometh black, that way may bee made for the application of convenient medicaments.

When the skul is not to be opened in the depending part.

In fractures, wherein it will be ſufficient to take away only a portion of the fractured skull, to make way for the diſcharging either of bloud or quittour, or removing of other hurtfull things, let it be done in the depending part; which rule notwithſtanding is to be omitted in two caſes.

1

Firſt, if you perceive that the menings are like to be inflamed: for then they ſhould more readily ſwell above the *cranium* in a depending part.

2

Secondly, if the braine appeare, the membranes being wounded, we muſt ſhun opening in the depending part; for according to *Galen. 6. method.* Seeing the braine is of a ſoft and fluid ſubſtance, it would eaſily fall downe to the depending part. *Vide Fallop. in Hippoc. de vulner. cap. c.* 35.

Of the inſtruments wherewith the skull is opened.

The chiefe inſtruments, with the which we open the skull, are theſe: The raſpatories, the levatories, the gemlets called *terebella*, the trepan, and the head-ſaw: Of the ſundry ſorts of raſpatories, you may ſee choice in *Parr. lib. 9. c.* 4.

The uſe of the Raſpatories.

When you will uſe the raſpatories, you muſt obſerve ſome things before the application; ſome things in the application; and ſome things after the application of them. Before you uſe them, firſt, you muſt place the patient in a good poſiture. Secondly, his head being firſt lapped in foulded cloathes, is to be ſtayed and kept immoveable. Thirdly, the eares are to be ſtopped with cotton or wooll, that the noiſe offend not the inſtruments of hearing. Fourthly, the brims of the wound are to be covered with peeces of linnen cloth; firſt to keepe them from the inſtruments; ſecondly, to

defend them from the aire, which otherwiſe would coole them.

In the uſing of the raſpatories: Firſt, wee muſt begin with the broadeſt, and then the leſſe broad, and laſtly the narroweſt. Secondly, they are often to be moiſtned with the oyle of Roſes; firſt, that they may ſcrape the more lightly; ſecondly, that they heat not the *cranium*: If bloud trouble the worke, uſe vineger and water. After you have uſed the raſpatories, uſe theſe ſame topicks, which are uſed after the application of the *Trepan*.

In what caſes a Raſpatorie is to be uſed.

Raſpatories are to be uſed in fiſſures or chinkes, and in a ſedes, when the print of the weapon is narrow.

The uſe of *Terebellum*.

The ſecond inſtrument is the Gemlet or *Terebellum*: Cowpers uſe the like inſtrument to raiſe up the ſtaves of veſſels, the point of it muſt be ſcrued. This hath a two-fold uſe; firſt it ſerveth to take out the bone cut by the trepan, whereas it is not ſafe to cut the whole bone thorow, as in the bones of the forehead. Secondly, it ſerveth for reducing a depreſſed part of the skull into its owne place, by firſt making a ſmall hole in the *cranium* with the pinne of the trepan, and then ſcruing it in.

Levatories.

As concerning Levatories, you may ſee divers formes in *Parrey, lib. 9. c. 5. & 6.* When you uſe them have a care that yee lift up equally every part of the bone, for if any part bee depreſſed, it may hurt the menings.

Of the uſe of the head-ſaw.

As for the head-ſaw: Firſt, it may be uſed when there is a depreſſion or a fracture on one ſide of the bone; for one ſide being by a ſtraight line divided by it, both there will be way made to the taking away of the bone, and the diſcharging of quittour or bloud, with ſmall loſſe of ſubſtance of the *cranium*. Secondly, it will ſerve to cut aſunder the diſtance of the *cranium*, left after application of the trepan in divers parts.

The Trepan.

The laſt inſtrument: it remaineth now, then, that I ſpeake of the Trepan: Concerning it, theſe things may be demanded: Firſt, to what end it is to bee applyed. Secondly, in what places it is to be applyed. Thirdly, what is to be obſerved

ſerved in the application of it. Fourthly, what is to be done after the application of it.

As for the firſt, the application of the Trepan hath a threefold uſe: Firſt, it ſerveth for the raiſing up of a bone depreſſing the menings and braine. Secondly, it ſerveth for removing of all things which doe hurt the membranes and the braine, whether they be quittour, bloud, ſplints of the *cranium*, or peeces of the weapon. Thirdly, it maketh way for the application of fit topicks. As for the places it muſt not bee applied: Firſt, upon the fracture, for this will increaſe the evill, chiefly if the fractured portions bee ſevered. Secondly, it is not to bee applyed upon a ſuture, becauſe the nervous fibres, and the veines and arteries, by the which the *dura mater* is annexed to the *pericranium*, and giveth it nouriſhment, ſhould be torne: from whence would ariſe paine, inflammation, and flux of bloud: which might be communicate to the membranes, and braine it ſelfe. Thirdly, neither is it to be applied to the places a little above the eyebrowes; for the wound ever afterward would remain unskinned. Fourthly, it is not to be applyed to the temples, firſt, by reaſon of the temporall muſcle: ſecondly, by reaſon of the *Sutura ſquamoſa*. Fifthly, it is not to be applyed to the lower parts of the skull, if the menings be wounded, leſt the braine fall out thorow the hole. Sixthly, it is not to be applyed to ſynciput of children, which are not above ſeven yeares old, ſeeing it is dangerous even in theſe who are of ripe age, unleſſe great neceſſitie urge.

Where the trepan is to be applyed.

In the application of the Trepan, theſe things are to bee obſerved: Firſt, that you take out the pinne, when you are come to the ſecond table. Secondly, it is to be moiſtned with oyle, that it may cut the better. Thirdly, the print of the trepan is to bee moiſtned now and then with cold water, leſt the skull be heated by the rubbing of the trepan. Fourthly, ſeeing it is impoſſible to cut all the parts equally, the skull being of a ſphericall figure, you are to remove the bloud, that you may perceive which part is moſt deeply cut, that you leane more

Things to be obſerved in the application of the Trepan.

more to the other. Fifthly when the part cut by the trepan beginneth to ſhake, it is the ſafeſt way to lift it up with the levatory. Sixthly, if any ragged peeces appeare, which may hurt the menings, you are to take them away by *Scalper Lexticulatus*, and the mallet of lead. After that the trepan is applyed above the *dura mater*, apply a peece of tafety or Satin, of a white or crimſon colour, moiſtned in *mel roſatum*, and *oleum roſatum*, untill the ſeventh day; afterward uſe the oyle of roſes, and the oyle of *Hypericum* mixed; let the *cranium* bee anointed with *Arcæus* liniment melted; fill up the hole with doſils and pledgets, laying above, ſuch topicks as heretofore I have ſet downe.

If in the application of the trepan, any remarkable bleeding enſue, ſome veſſell being cut, which did cleave to the ſecond table, then apply this medicament of *Galen. 6. method.* ℞ *aloes* ℥ij, *thuris, maſtiches, an.* ℥j, *ex iſtis pulverizatis, pilis leporinis, & ov. album. fiat linimentum, quod applicetur.* The skull will ſcale, according to *Arcæus, lib.* 1. *cap.*4. within the ſpace of foure and twenty or five and twenty dayes, if his liniment be applyed to the bone. But according to *Parrey*, not before forty or fifty dayes; but in truth no certaine day can bee appointed. *Hieron. Fabric. ab aq. pendent. part.* 2. *lib.* 2. *de vulner. cap.*18. counſelleth firſt to apply the oyle of roſes to turne the matter, which falleth upon the *dura mater* into quittour; for *Galen. lib.*2. ℞ γίνη, *c.* 2. affirmeth that we ought to uſe oyle of roſes, when we meane both to repell and ſuppurate. It will be the more ſuppurative if it be *oleum roſaccum completum*. He adviſeth to mingle ſome Roſin with the oyle of roſes; for in digeſtives, according to *Galen. lib.*5. *ſympt. cap.*19. there ought to be an emplaſticke facultie, which the oyle of roſes hath not of it ſelfe, but of the Roſin. In the firſt dreſſings, and in the Summer time, more oyle of roſes and leſſe roſin is to be uſed; but afterwards when we meane to drie and mundifie, as alſo in the Winter, more roſin and leſſe oyle is to bee taken. When the wound is dreſſed, embrocate the parts adjacent of the head with the oyle of roſes warmed, as alſo

Lib.9. cap. 20.

alſo the necke, chiefly where the jugular veines are, partly to aſſwage paine, if any be, partly to contemperate the heat of the bloud.

LECT. XXI.

Of the curation of fractures appearing in the wounded part.

HItherto I have diſpatched thoſe points which frequently are common to all ſorts of fractures, which doe happen to thoſe who are of ripe age: now it reſteth that I ſhew unto you how all ſorts of fractures in ſuch perſons are to be cured.

The differences of fractures in perſons of ripe age.

Now a fracture in theſe perſons is two-fold: for it is either in the ſame part which hath ſuffered ſolution of unity, or in another part. If it be in the ſame part, it is either ſimple, compounded, or complicat.

A ſimple fracture.

A ſimple fracture is, when one only kind of fracture happeneth: Of this there are three ſorts; *Rima*, a chinke or cleft; *Contuſio*, a contuſion of the skull; and *Sedes*, a ſitter, when the print of the wounding inſtrument is left in the skull.

Of a *Rima* or chinke.

Rima or *fiſſura*, a chinke or a cleft, is two-fold; for it is either *conſpicua*, eaſily to be diſcerned by the ſight; or *inconſpicua*, either hardly to be diſcerned by the ſight, or not at all; which is called *Capillaris*, a haire-like chinke. Now a conſpicuous chinke paſſeth thorow either one, or both the tables of the skull. If it paſſe not deeper, than to the ſpongious part betweene the two tables, the chinke it ſelfe is ſo farre to be dilated. If the cleft paſſe thorow both the tables, then the chinke is either to bee dilated thorow both the tables of the skull, even to the *dura mater*, or thorow the firſt table at the leaſt, making way thorow the ſecond table alſo leaving a

competent apertion for the diſcharging of clotted bloud, or quittour, for the depending part of the head, thorow the ſecond table. Now the depending part is not to be taken from the ſituation of the parts of the body, but from the poſition or poſture of the ſame.

Of *rima inconſpicua*, or *capillaris*.

You muſt deale after this ſame manner with *rima inconſpicua*, or *Capillaris*, or an obſcure chink. But it is not an eaſie matter to finde it out. If therefore you cannot diſcerne it either with the eyes, or the helpe of a multiplying glaſſe, cauſe the patient to hold in his breath, and to ſtretch his breſt. If this being done, either a thin humor, or a bloudie *ſanies* doe iſſue out, it is an excellent ſigne: if this doth not appeare, then apply to the part moſt ſuſpicious Inke, made thin with a little vineger, to make it pierce. The next dreſſing, dry the skull with a wet ragge or ſpunge, and if you ſee any print of the inke to remaine in the skull, follow the buſineſſe untill you come to the uttermoſt of the impreſſion of the inke, although you muſt diſcover the *dura mater*. Now chinkes muſt not be dilated by the trepan, but the raſpatories, for wee ought not to take away more of the skull than neceſſitie urgeth. Peruſe *Parr. lib. 9. c. 4.* and *Fallop. com. in lib. Hippoc. de vulnerib. cap. c. 3.* When the *rima* is dilated, dreſſe the wound, as you doe after the application of the trepan, whereof I ſpake ſufficiently in my former Lecture.

2 Of the fracture called *Sedes*.

Sedes, or a ſitter, is a fracture cauſed by a ſharp inſtrument, which leaveth the print of it in the skull: if it paſſe thorow both tables, and no ſplints of the bone pricke the menings, and ſufficient way be made by the weapon for the diſcharging of the quittour, no further apertion is to be made; but the wound is to be dreſſed, as I preſcribed, after the application of the trepan. But if either ſplints of the bones doe offend the *dura mater*, or the paſſage be too narrow for the diſcharging of the quittour, a further apertion of the skull is to bee made by ſuch inſtruments as ſhall ſeeme moſt fit for this operation. If the *ſedes* paſſe not further than the firſt table, the *cranium* is to be ſmoothed with the raſpatories, leſt the quittour

tour ſetling in the *ſides* cauſe a deeper cariosity. Then the wound is to be dreſſed by *Arcæus* his liniment relented in a ſpoone. It falleth out many times if the conſtitution of the wounded party bee good, that the *Cranium* doth caſt no ſcale.

3 Of a contuſion.

The third kind of a ſimple fracture called *Contuſio*, a contuſion of the ſcull, reſteth to be ſpoken of.

A Contuſion is a ſolution of continuity in the *Cranium*, when as by the violence of an externall inſtrument, the ſmall portions of it are brought neerer together than nature hath placed them, yet have returned to their owne poſiture after that this compreſſion is cauſed.

This kind of fracture is eſpied in the beginning, or in progreſſe of time. In the beginning it is found out by the alteration of the colour of the ſcull: The colour of a lively bone is of a whitiſh colour, mingled with a lively ruddineſſe; but if it be mortified, it will be whitiſh without any redneſſe: if it be *carious* or rotten, it will be of livid or blackiſh colour. If therefore ſuch a kind of fracture happen, the pleaſant ruddineſſe of the ſcull will be gone, and white patches will appeare in it, ſuch as are ſeene in the nailes of ſome perſons fingers. In progreſſe of time, if it bee left untouched, it will become of a livid or blackiſh colour, being *carious*. In this kind of fracture you are to take ſo much of the *cranium* as is mortified by the contuſion with the raſpatories, and then to heale the wound by incarnation. So much then of the three ſorts of ſimple fractures.

Of a compound fracture.

A compound fracture is when ſome further inconvenience is annexed to the ſolution of unity in the ſcull, as the loſſe of ſubſtance, or removing of ſome part of it from its own place.

The differences of it.

Of this there are three ſorts, *Depreſſio*, a depreſſion, *Concameratio*, a vaulting, and *Exciſio*, or an abſolute diviſion of ſome part of the *cranium* from the reſt.

A depreſſion.

A Depreſſion is, when as the ſcull is beaten down; in this kind of fracture, ſhivers of the ſcull are quite ſeparat from the hole ſometimes; Againe, ſometimes they cleave to the

hole in one part, and are ſeparat from the other. Thoſe which are altogether ſeparat, you ſhall remove with levatories: If the fractured part cleave to the hole in one ſide, and that you cannot elevat it with a levatory, then you are to apply the Trepan as neere to the fractured part as you can, that as little as may be of the *cranium* bee taken away. Afterward either reduce the depreſſed part to it own place, or altogether remove it, as you ſhall think moſt expedient. In performing theſe actions, you are to uſe great caution, that the menings bee not hurt by the ſharp ſplints of the bones fractured.

Of *Concameratio.*

Concameratio or vaulting is, when as the ſcull by a ſharp pointed weapon with force being pierced, and with might being pulled out, is pulled upwards, leaving an empty ſpace or vacuity beneath. If this kind of fracture goe no further than through the firſt table, you are to ſmooth the ſcull, and to heale the wound according to the method ſet downe before. But if it paſſe through the ſecond table, you muſt open the ſcull in the moſt depending part with the trepan, to make way for the diſcharging of the quittour: for *ſanies* muſt of a neceſſity bee lodged in the lower vacuity, or void ſpace, if the weapon it ſelfe hath not made ſufficient way: If any ruggedneſſe prick the *dura mater*, you are to remove the whole fracture compaſſing it with a large head of a Trepan, and then to cure the wound as hath beene taught.

Of *Exciſio.*

Exciſio is, when the part of the ſcull wounded is altogether ſeparate from the hole; if the fragment cut away, ſtick to the *Cutis muſculoſa*, and the wound go no deeper than the firſt table; it is to bee ſeparated from the *cutis muſculoſa*, and the *cranium* is to bee ſmoothed with a raſpatory: But if both the tables of the ſcull cleave to the *cutis muſculoſa*, they are not to bee taken away, but to bee reduced to their owne place, the wound having firſt beene cleanſed with wine or ſpirit of wine warmed. Then the *cutis muſculoſa* is to be faſtned to the reſt, with ſo many ſtitches of foure twiſts of ſilk or threed drawne through with a rowling needle. See an example

ample of this in *Parrey lib. 9. cap. 7.* Now time admoniſheth mee to ſpeake ſomewhat of a complicat fracture of the ſcull.

A complicat fracture is, when either ſundry fractures of one ſort doe concurre, or more of divers kinds. Many fractures of the ſame ſort may happen, as ſundry chinkes. So many chinkes as are perceived by the eyes are to be dilated with the raſpatories. In like manner ſundry fractures of divers kinds may meet, as a chink with a depreſſion. In ſuch complicat fractures you are to proceed no other wayes, than have beene ſhewed in ſolitary fractures; for a chink is ever to be dilated if it bee conſpicuous, and the part of the ſcull depreſſed muſt either be wholly taken away, if the aſperities of the ſecond table prick the *dura mater*, or if they doe not, it is to be reduced to its owne place, if it be not wholly ſeparat from the ſound parts of the *cranium*. According to theſe canons curative you may proceed in all fractures of the ſcull in what part ſoever they happen, if you except the ſutures, and that part of the ſcull which lyeth under the temporall muſcle. Of a complicat fracture.

A ſuture may ſuffer a ſolution of unity three manner of waies; by Separation, Depreſſion, and Colliſion. Of a Depreſſion I have ſpoken ſufficiently already. Of fractures in the ſuture.

A Diſſolution of a ſuture is, when as thoſe parts of the *cranium* which are united by the ſuture gape being ſeparate by ſome externall violence; if this ſeparation bee large, the nervous fibres, which make the ligament by the which the *dura mater* is tyed to the *pericranium*, muſt be torne, although this appeare not to the light: from whence often ariſeth inflammation, and danger of death. Of a diſſolution.

A Colliſion is a contuſion of the brims of the ſuture, and of the ligament which paſſeth through it, cauſed of a violent compreſſion of the brims of the ſuture. In theſe caſes if fearfull accidents, as a fever, vomiting, or a convulſion, &c. doe perſwade you that the ſcull muſt be opened, then you are to apply the Trepan on either or both ſides of the ſuture: for Of a Colliſion.

if you ſhould ſet it upon the ſuture, horrible ſymptomes firſt would appeare, and at laſt death enſue.

How a fracture under the temporall muſcle is to bee handled.

If a fracture under the temporall muſcle bee accompanied with a wound, this wound is either a puncture or a tranſverſe, or an inciſion, according to the length: If it be a puncture, or tranſverſe, it muſt prove dangerous as hath beene ſhewed. If the wound be inflicted long waies, it is to bee dilated by doſils or ſponges: If the fracture be a chink, it is to be dilated by the raſpatories. But if it bee a great fracture, wherein the aſperities doe prick the menings, or the depreſſion of the ſcull doth beare downe them by it weight, then a triangular inciſion is to be made a little above the fractures ſhunning the temporall muſcle, and the Trepan to be applyed, then the ſhivers which are altogether ſeparate from the ſound ſcull, are to be taken away, and the reſt which are not ſeparate to be reduced to their owne poſiture.

After this as often as you dreſſe the wounded perſon, you are to cauſe him to bend downe his head, to ſtop his mouth, and noſe, and to labour to breath ſtrongly, that the *ſanies* may be expelled out of the wound. When this is done you muſt make injection of a mundifying decoction with a Syringe to waſh out all impurities, which otherwiſe would lodge there. See a memorable example of this in *Parey li. 9. cap. 19.* Hee adviſeth to keepe a leaden pipe in the wound, but ſeeing this by reaſon of the hardneſſe muſt cauſe paine, and is not fit for the dilation of the ſection, a ſponge compreſſed is farre better: for firſt it is ſoft: ſecondly, it ſucketh into it ſelfe the impurities: thirdly, it dilateth powerfully the wound, and keepeth it open untill all the ſhivers of the *cranium* caſt.

LECT.

Lect. XXII.

Of Fractures in other than in the place wounded, and those which happen when the Cutis Musculosa *is not wounded.*

IN my last Lecture I discoursed of Fractures which may fall out in the parts wounded: now I am to shew how fractures in other parts than those which are wounded are to be handled, when they fall out.

Now Fractures which fall out in the *cranium* in another part than that which is subjacent to the *Cutis musculosa* wounded, are either in a part of the *cranium* adjacent to the solution of unity of soft parts of the scull wounded, or in a part somewhat distant or remote.

If a fracture fall out to be not in the part wounded, you shall find it out by these seven signes. First, the wound of the *Cutis musculosa*, which covereth the fracture, will not admit curation in that part which is neere the fracture, whereas in the other parts it will admit cicatrization. Secondly, out of the part neere to the wound, you shall perceive a thin and ichorous matter to flow. Thirdly, more copious matter will flow out of the wound, than the bignesse of the wound can seeme to afford. Fourthly, the flesh which groweth neere to that part is spongeous, and loose, not firme. Fifthly, now and then the party wounded will be severish. Sixthly, if you thrust your probe betweene the *cranium* and the *cutis*, you shall find the *cutis* separate from the *cranium*. Seventhly, some tumour and softnesse will appeare in the cutaneous part, which is placed above the fracture.

Signes of a fracture in the scull, not in the wound, but in a part adjacent.

A fracture in a remote part, or much distant from the wounded part, is called *Resonitus*, or *Contrafissura*, a countercleft.

Of *Contrafissura.*

cleft. This falleth out, when the *cranium* is ſtrooken upon one part, and fractured in another: This happeneth either in the ſelf-ſame bone, or in divers bones: if in the ſelf-ſame bone, it may fall out two manner of waies; to wit, either laterally, as when the right ſide of *Os frontis* is beaten, and the left ſide cleft, or contrariwiſe; or Perpendicularly, from the upper to the lower part, as when not the upper table which received the blow, but the lower is fractured: If a countercleſt happen to be in divers bones, this may fall out two manner of wayes: Firſt, if the right ſide bee beaten, and the left fractured, as if the right parietall receive the blow, and the left bee cleft, or contrariwiſe. Secondly, this may happen, if the forepart be ſtrucken, and the hinder part cleft, as if the *os frontis* bee beaten, and the *os occipitis* bee cleft, and contrariwiſe. This kind of fracture which happeneth in the *cranium* in a part oppoſit to the ſolution of unity, doth chance to thoſe, who either have no ſutures at all, or ſuch as are very obſcure and very cloſe; for in ſuch perſons the aire may be caried more compact, and with greater violence from the part contuſed, or wounded, to the oppoſit part: for when the aire which is within the ſcull is ſtrongly moved by a blow, and on every ſide is driven by the force of the blow, it is entirely caried and wholly through the ſubſtance of the braine to the oppoſit part; where it meeting with the ſcull, which by reaſon of its firmeneſſe cannot yeeld, cauſeth a fracture in the ſcull; even as two men in a violent race meeting together are by this violent meeting beaten back. This is often ſeene in a glaſſe, which being knocked in one ſide is cleft in the oppoſite part.

How a countercleft is cauſed.

That the ſutures are not uniforme, theſe Authors beare witneſſe: *Veſal. li.* 1. *c.* 6. *de human. corp. fabrica. Sylu. comment. in lib. Galen. de oſſib. Columb. li.* 1. *c.* 5. *Par. li.* 4. *c.* 3. *Hippoc. lib. de vuln. cap. & Fallop. in eund. c.* 5. *& in lib. Galen. de oſſib. c.* 13. That ſutures againe are either hardly ſeene, being obliterate and worne out, or noe at all, theſe Authors doe affirme:

The diverſities of ſutures.

firme. *Ariſt. de hiſtor. animal. li. 3. c. 7. Celſ. lib. 8. c. 1. Aleſ. Benedict. anatom. li. 4. c. 7. Veſal. li. 1. c. 6.* and *Hippoc.* and *Fallop.* in the place before ſpecified.

And although *Paul. Æginet. li. 6. c. 90.* and *Guido* with others more, deny that a *Reſonitus* or *contraſiſſura* can happen; yet theſe authours againſt which it were temeritie to except, doe affirme that it may happen. *Cel. li. 8. c. 4. Nicol. Florent. Sermon. 7. Summa 2. tract. 4. c. 1. Valeriola append. loc. commun. c. 5. Hippoc. lib. de vulnerib. cap. Fallop. commentar. in eundem c. 14. Parr. lib. 9. c. 8.* Although it bee a hard matter to finde out this kind of fracture, yet you ſhall goe about to find it out by theſe meanes. Firſt, if ſignes of a fracture doe appeare, as a fever, vomiting of choler, and ſuch like, and no chink appeare in the wounded part, then you are to take a view of the oppoſit part: If a tumor or ſoftneſſe doe appeare in any part of it; then you may be aſſured that the fracture is in the skull, ſubjacent to that part. Secondly, if no tumor or ſoftneſſe appeare in the oppoſit part, ſhave the head and apply this emplaſter following, *℞ picis naval. & cer. an. ℥iii, terebinthin. ℥i, maſtich. & irid. pulverizat. an. ℥ii. fiat emplaſt. ſ. a.* Draw this emplaſter upon lether and apply it to the oppoſit part, and let it lye 24 houres. If after you have taken it away, the *cutis muſculoſa* appeare in any place more moyſt, ſoft and ſwelled than the reſt of it is, it is likely that there the fracture is. Thirdly, if the grieved perſon doe often touch with his hand the part oppoſit to that, wherein the ſolution of unitie is, not thinking upon any hurt done to it, you may ſuſpect that the fracture is where he toucheth. If the ſecond table be fractured, the firſt remaining whole, then you muſt apply the trepan, partly that you come to take away ſplints, which doe prick the *dura mater*, partly to make way for the diſcharging of coaghlat blond, and the *ſanies*. If any patient having ſuch a fracture doe die, the Chirurgeon is not much to be blamed: for a Chirurgeon may be excuſed, if the patient dye, in foure caſes. Firſt, if the *cranium* by a violent contuſion be depreſſed, and the skull

Whether a counterclſt. may happen.

preſently returne to its owne place. Secondly, if the chink be only capillar, and hard to be ſeene. Thirdly, when the ſecond table of the skull is broken, the firſt remaining whole. Fourthly, when a fracture happeneth in the part oppoſit to that which is wounded. In theſe caſes the Chirurgeon may be excuſed, ſeeing the moſt skilfull Artiſt may be deceived in theſe caſes. If you find out a *contrafiſſura*, if it be but a meere *rima* or chinke, after you have made inciſion through the ſoft parts lying above the *cranium*, dilate the chink with the raſpatories, that way may be made for the diſcharging of the coagulat bloud and *ſanies*: for theſe will be gathered out of all doubt in all chinks.

How fractures without diviſion of the *cutis muſculoſa* are to be cured.

I have ſhewed how fractures in a wound happening in perſons of ripe age are to be cured: now I am to ſhew you how fractures in the skull are to be cured, when as the ſoft parts above the *cranium* are not wounded, yet the *cranium* offended. If therefore by a contuſion the skull be fractured, the *cutis muſculoſa* not being divided, you are to aske of the party offended whether he hath vomited choler, whether he loſt his ſight, whether hee could not ſpeake, whether bloud did iſſue out of his noſtrils and yeares, whether hee ſeemed to be in a tranſe, whether he perceived a giddineſſe after the blow. Theſe ſymptomes doe ſhew that there is a fracture. And although no accidents doe diſcover themſelves, yet you muſt not be ſecure, but aske whether the patient in former times hath not had the head-ach, for then there is leſſe danger, or whether he was ſtrucken with a heavy weapon, by the hand of a ſtrong man enraged, or whether hee felt a noyſe in the braine when he was ſtrucken. If theſe ſignes appeare, you muſt ſuſpend your prognoſticks towards the beſt event. In this caſe ſo you are to goe on: If no fearfull ſymptomes after the blow received doe continue, then ſhave that part of the head where the blow was received: Then apply a medicament which aſſwageth paine, dryeth and is aſtringent: Theſe intentions a *cataplaſme* furthereth made of barley meale, vineger and water in the Summer,

How theſe fractures are to be cured.

but

but vineger and wine in the winter, having added the powder of red roses, *myrtil* berries and *mastick*, and some oyle of roses, when the *cataplasme* is brought to a consistence: Secondly, you must minister a medicament which doth purge choler, as this: ℞ *caricostin. & elect. de succo ros. an.* ℥ij. *syrup. de cithor. cum rhab.* ℥i. *aq. endiv.* ℥ii. *Misc. ut paretur potio.* Thirdly, the cephalick veine of the same side is to be opened, or cupping glasses with scarrification, or the leeches to be applyed. Fourthly, the oyle of sweet almonds is to be dropped into the eares, that the quittour which is gathered there may be discharged. In like manner the passages of the nose are to be moystned with this same oyle. About the fourth day you are to use gargarismes made of the decoction of barley, red-rose leaves, cowslip flowers, betony flowers, eye-bright, stechas, and some rew: With the decoction you are to mingle *Mel rosatum*, and *Oxymel simplex*. About the seventh day you are to use discutient medicaments, as *diachylon ireatum*, or *emplastrum de betonica*, made soft in the summer with the oyle of roses, and in the winter with the oyle of dill. If having used these meanes, fearfull symptomes do appeare after the seventh day, you must not defer the incision of the *cutis musculosa*, and the opening of the scull: for then it is not to bee doubted but that bloud and quittour are fallen upon the *dura mater*.

In what cases the scull is to be opened.

Although the soft parts above the skull be not divided, yet in three cases you must make incision, and open the scull. First, if clotted blood or quittour bee lodged betweene the *Cranium* and the *Dura mater*, which you shall perceive if bloud did issue out of the eares or nostrils after the blow was received, if he bee sleepy, stupid, or have a heavinesse of the head. Secondly, these things are to bee done when splints of the scull doe pricke the menings, which the paine in the part doth discover. Thirdly, when a depression of the scull remaining, doth beare down the menings, and causeth a stupidity, and a pricking paine when the party doth blow his nose.

LECT.

LECT. XXIII.

Of wounds of the Menings and the Braine.

HAving delivered unto you in my laſt Lectures the method of curing thoſe wounds which may befall the externall parts containing of the Head; now I intend to ſhew you, how wounds in the internall containing parts, and the contained parts are to be cured.

The internall parts containing are two; the two menings, or membranes which compaſſe and environ the braine, called by the *Arabians*, *Dura & pia mater*: In wounds of the *Dura mater* there is alwayes a vehement paine. Five inconveniences may happen to the *dura mater*, to wit, a wound, paine, inflammation, apoſtemation, and diſcoloration.

O a wound in the *dura mater.*

If you perceive that there is an immoderate flux of bloud, the membrane being wounded: then immediatly you muſt make way to come to the membrane, if the wounding inſtrument hath not made way enough; and *Gabri* powder ſet downe *6. Method. Medend.* made of aloe, franckincenſe, maſtick, the white of an egge, and the haire of a Hare, is to bee applyed.

Prognoſtick.

If in a puncture of the *dura mater*, or after unskilfull dreſſing, drowſineſſe and ſleepineſſe ſeize upon the wounded party, death ſhortly will enſue. See *Dodon. obſerv. Medic. cap.* 3. Now ſeeing great paine followeth the *Dura mater* being wounded, you muſt with all expedition goe about to aſſwage it.

Topicks fit for the *dura mater* wounded.

In this caſe firſt Narcoticall medicaments have no place: for ſo both the membrane if ſelfe, and the whole body would become ſtupified; ſecondly, unctuous medicaments which mollifie, are not to bee uſed: Becauſe theſe will cauſe the mem-

membranes to become dull, to swell, and last of all to putrefie. Wherefore the oyle of roses warme, is to be powred upon the membrane untill the paine be mitigated, and quittour appeare in the wound. Then *mel rosatum*, or *syrupus è ros. rub. sicat.* are to be mingled with the oyle of roses, in equall quantity, untill the wound be perfectly digested. Last of all the *Dura mater* is to be mundified and dried with fit medicaments. Such are *mel rosatum*, *syrupus è ros. rub. siccat. syrupus myrtinus* or *smativus* alone, having no oyle mingled with them. And although the *pia mater* by reason of its softnesse may be united and agglutinated; yet the *dura mater* because it is hard, nervous and thin, will not admit agglutination: for in agglutination the brims of the wounded part must bee brought, and kept together, which is performed by rowling, and stitchings, which in this case cannot be used. Wherefore it must be cured by incarnation, or procuring of flesh to unite the parts disjoyned.

Of an inflammation of the *dura mater*.

An inflammation is a red tumour of the *dura mater* with a distention of the vessels of the same, so great sometimes, that it filleth the hole of the *Cranium*, and groweth above it. This accident is dangerous.

How it is to be cured.

Wherefore first of all, phlebotomy is to bee administred, and a slender dyet apointed: Then the part is to be fomented with the decoction of the marsh-mallow, linseed, and fenugreeke adding grounsell and violet leaves, as also other herbes which are to be applyed to a phlegmone, if occasion shall require. This being done, the oyle of roses, myrtils, or quinces is to be applyed. If you prevaile not by the application of these meanes; but that you perceive that the tumour rather increaseth than diminisheth, then you are to dilate the hole of the scull, by taking away more of it.

Of the apostemation of the *dura mater*.

If quittour be contained within the *dura mater*, which you shall perceive by the extraordinary whitenes of some part of it, as in pustules of the skin, then you are warily to open it, that you in no waies touch the braine: Then you are to apply drying and absterfive medicaments, as *mel rosatum*, *& sirupus è rosis*

roſis ſiocis. Vide Fallop. Comment. in lib. Hippoc. de vulnerib. cap. c. 43. & Paræum lib. 9. c. 21.

Of the diſcoloring of the *dura mater*.

Diſcoloring or blackneſſe may proceed from five cauſes: *viz.* From the violence of the contuſion; From coagulat bloud; From the coldneſſe of the aire; By the application of unproper medicaments; Laſt of all, from putrefaction.

The cauſes of it.

If the blackneſſe proceed from the violence of the contuſion, it ſeldome continueth above foure dayes. In this caſe uſe *oleum roſaceum*, and *mel roſatum*; or the oyle of egges, with a little *aquæ vitæ*, and ſome of the *pulvis cephalicus*, with a few grains of the powder of ſaffron.

The curation of it.

If congealed bloud hath cauſed a blackneſſe, then apply this medicament: ℞ *aq. vit.* ʒij. *pulv. gran. tinctorum* ʒij. *croci* ℈. *nellis roſ.* ʒii ß. *ſarcocoll.* ʒ. 3 *leniter bulliant omnia: colatura utimini donec evanuerit nigredo.*

If unproper medicaments have cauſed the blackneſſe of *Dura mater*, then it is to be cured by the application of ſuch medicaments as are in faculty contrary to thoſe which have beene applyed; ſo if humid, unctuous, or fatty medicaments have beeene uſed, you are to change theſe, and to apply thoſe which are drying, as the cephalick powders mingled with *mel roſatum*, *oleum roſatum*, or both mingled together. If ſharp medicaments have been applyed, in ſtead of theſe mild and lenient medicaments are to be uſed, as the oyle of *hypericum*, or of earth-wormes, with a little ſaffron: for it is certaine that moyſt medicaments may cauſe blackneſſe by increaſing filth, and ſharp medicaments by their immoderate heat may cauſe this ſame.

If blackneſſe proceed from putrefaction, which you may diſcerne by the ſtrong ſent of the *ſanies* flowing from the wounded part, then uſe theſe medicaments which follow: ℞ *aq. vitæ* ʒi ß. *ſyrup. abſynth. & mell. roſ. an.* ʒij. *unguent. Ægypt.* ʒi ß. *ſarcocoll. mirrh. aloes an.* ʒj. *vini albi potent.* ʒi ß. *bulliant omnia leniter, colentur, ac ſerventur ad uſum. It.* ℞ *aq. plantag.* ʒj. *unguent. Ægyptiac.* ʒi ß. ♀ *præcipitati* ℈j. *Miſc. applicetur*

tur iſtud medicamentum calefactum poſt agitationem. If by theſe meanes the putrefaction ceaſe not, but perſevere, and the tumour increaſe and grow above the hole of the skull being immovable, black and dry; If the eyes of the patient appeare of a firy colour, bunch out, and bee ſtill moving; If the party ſtill toſſeth and tumbleth himſelfe in his bed, and rave, the ſick perſon will dye, and the ſooner if theſe ſymptomes continue conſtant and uniforme. This muſt of a neceſſity enſue both by reaſon of the extinction of the naturall heat, and likewiſe the gangrene of a noble part. *Vide Fallop. loc. cit. c.* 41. *& Par. lib.* 9. *c.* 21.

Of wounds of the *pia mater.*

The *Pia mater* is very thin, and cleaveth ſo faſt to the braine, that it cannot bee wounded, unleſſe the braine alſo bee offended. Wherefore ſuch wounds for the moſt part are deadly, for the braine being laid open unto the aire, eaſily is corrupted, by reaſon of the externall cold, which extinguiſheth the weake heat of the braine, and by reaſon of the moiſture which both falleth upon the braine, and is gathered in the ſubſtance of the braine it ſelfe, by reaſon of its weakneſſe.

The curation of them.

Firſt then if any memorable flux of blood happen by reaſon of the multitude of veines which are in the *pia mater*, it is to bee ſtayed with *Galens* medicament ſet downe by him, 5. *Method. cap.* 4. whereof I have ſpoken heretofore. Then the part is to bee cured with medicament warming and drying, which I have ſet downe in the curation of the *Dura mater* wounded.

Now wounds which happen in the parts contained in the head, are to be handled: Theſe are two, *Cerebrum*, and *Cerebellum*. To the braine theſe griefes may happen; a wound, apoſtemation, putrefaction, ſideration, a concuſſion, a *fungus*, and a tumour by reaſon of flatuoſity.

Now as concerning wounds of the *cerebrum* or braine, theſe five points may bee demanded. Firſt, which are the ſignes of the braine wounded. Secondly, what ſymptomes doe enſue. Thirdly, whether wounds of the braine bee curable

rable or no. Fourthly, how they are to be dreſſed. Fifthly, what ſymptomes uſually remaine after that a wound of the braine is cured: of theſe I will ſpeake in order.

Signes of the braine wounded.

As concerning the firſt, the ſignes of the braine wounded, are theſe which follow: Firſt, a fever and vomiting of choler: *Hippoc. aphor. lib. 6. 50.* ſaith, If any have the braine wounded, they muſt have a fever and vomiting of choler. The ſame he repeateth, *Coac. prænot. 500. & 507.* This ſame *Celſus* delivereth in moſt eloquent words, *lib. 8. cap. 4.* Secondly, loſſe of ſpeech. *Hippoc. ſect. 7. aphor. 58.* They who have ſuffered a vehement concuſſion of the braine, immediately become dumbe. Thirdly, a fall, and ſlumbering. *Coac. prænot. 499.* Fourthly, ſenſleſneſſe, dimneſſe of the ſight, giddineſſe. *2. Prorrhet. & lib. de vulner. cap. Fernel. lib. 7. pathol. c. 8.* hath theſe words: If the ſubſtance of the braine be hurt, the reaſon becommeth weake, and all ſymptomes increaſe, and oftentimes a portion of the braine commeth out, not without danger of life. Fifthly, you ſhall pronounce the braine to be wonnded, if the menings being divided, a ſubſtance like to fat come out; which notwithſtanding doth neither ſwimme above water, neither doth melt with the fire, as fat doth. See *Parrey lib. 9. cap. 22.* Sixthly, if the braine bee hurt, the quittour will bee thick, round, and like a marrowie ſubſtance.

Symptomes which follow after a wound of the braine.

As concerning the ſymptomes which enſue, the braine being wounded, theſe are they; foaming at the mouth, darkneſſe of the ſight, giddineſſe, a convulſion, a fever, vomiting of choler, ſtupiditie, loſſe of reaſon, deafeneſſe, dumneſſe, a palſey, a lethargie, and laſt of all, an apoplexie.

Prognoſticks.

As for the third demand, all wounds of the braine are dangerous at the leaſt, and that for theſe reaſons: The firſt is the nobleneſſe of the part, and the neceſſary uſe of the functions of it. The ſecond is the motion of the braine; but a wounded part requireth reſt, if it be to be cured. *Hippoc. lib. de ulcerib. circa principium.* The third is the humiditie of the brain; but the curation of ulcers and wounds is performed by exſiccation,

Why the wounds of the braine are dangerous.

ſiccation, according to *Galen. lib. 4. method. medend. cap. 5.* The fourth is the coldneſſe of the braine, which engendreth many excrements, and the more when a wound hapneth, which weakneth the part. The fifth is the conſent of the ſinewes, which ſpring from thence. The ſixth, becauſe remedies paſſe not readily to the braine wounded. Three cauſes may be alleaged, why ſome perſons eſcape ſometimes, having received great wounds in the braine: The firſt is the wholeſome and ſtrong conſtitution of the body: The ſecond is the artificiall dreſſing of the wound; for as ſundry recover of great wounds, if they bee dreſſed according to art; ſo many die of ſmall wounds, if they be negligently or ignorantly dreſſed: Thirdly, ſuch ſtrange events are to be aſcribed to the providence and mercie of the almighty God, who of his infinit goodneſſe by his ſecret judgement prolongeth the lives of ſome, as hee ſhortneth the dayes of others.

Although all wounds of the braine be dangerous, for the reaſons which I have alleaged; yet great and dangerous wounds have beene cured: That this aſſertion is true, I will prove by the teſtimonies and experiments of famous Writers both ancient and moderne. Amongſt the Ancients *Galen* ſhall bee the ring-leader: Hee then writing upon the eighteenth Aphoriſme of the ſixt booke of *Hippocrates*, affirmeth that hee ſaw one healed, who had received a remarkable wound in the braine, in *Smyrna* of *Ionia*, while his maſter *Pelops* was alive; he affirmeth indeed this to be very rare, *l. 10. de uſu part.* He maketh mention in like manner of a young man, who recovered, when he had received a wound in one of the fore ventricles of the braine. *Paulus Æginet. lib. 6. c. 88.* affirmeth that ſundry have eſcaped death, and have recovered their health, when they have beene wounded in ſome principall part, above all expectation. *Chriſtophorus à Vega, comment. in Aphor. 15. lib. 6. Hippocratis* hath theſe words; Wounds of the braine, if they reach to the ventricles, they are not cured; but wee have ſeene many others cured, which paſſed to the ſubſtance of the braine, and out of which ſome portion of

Prog. 2. That great wounds of the braine have beene cured.

the braine came out. *Horat. Augenius, lib. 9. Epiſt.* 2. writeth thus; We ſaw once the whole ſubſtance of the braine wounded, and the ventricles cut aſunder, and that a portion of the braine came out of the wound as ſoone as it was made, and that notwithſtanding the party was cured. The cauſe of this event was the ſtrength of the body. *Gemma lib. 1. cap. 6. Coſmoc.* ſaith, It greatly concerneth Phyſitians to note, that even weake perſons ſometimes eſcape of grievous diſeaſes, wherein the ſignes threaten imminent danger. So lately an ordinarie perſon was by our help healed, when as a ſhiver of the skul paſſed thorow the menings, and ſome of the ſubſtance of the braine came out. *Ioan. Andreas à cruce, lib. 1. Chirurg. cap.* 14. a Venetian, affirmeth, that hee cured ſundry, whoſe braines were wounded, and nameth ſundry witneſſes. *Fallop. cap.* 45. *de curatione vulnerum cap.* hath theſe words: A great portion of the braine may come out, and yet life remaine: wherefore forſake not the wounded perſons; for I my ſelf have made triall of ſtrange things. *Carpus tractatu de fractura cranii*, affirmeth that he ſaw ſix perſons who recovered, when as a notable quantitie of the braine came out of the wounds, and that they only deny ſuch good events, who have ſeene but a little. *Braſavola in comment. ad Aphor.* 18. *lib. 6. Hippocratis*, affirmeth that hee ſaw two who eſcaped after that their braine was wounded. *Nicol. Maſſa, tom. 2. epiſt.* 11. hath theſe words: I take God to witneſſe, and many yet alive can witneſſe that I have cured ſundry by convenient medicaments and art, whoſe skuls, membranes, and braines have beene wounded, and immediately he nameth ſundry. *Theodoricus, l. 2. cap. 2. Chirurgiæ*, affirmeth boldly, that he was as ſure that wounds of the membranes, the ſubſtance of the braine and ventricles may be cured, as he was of death. *Volober. Coit. li. obſerv. anatom. & Chirurgicar.* bringeth ſundrie inſtances, that wounds of the braine may be cured. The like hath *Jacotius comment. ad Aphor.* 3. *lib.* 1. *ſect.* 3. *coac. Hippocrat.* Peruſe alſo *Arcæus lib.* 1. *cap.* 6. who doth alleage foure examples of this truth: and *Ambroſe Parrey lib.* 9. *cap.* 22. alleageth ſome: and *Guilielmus Fabricius*

Fabricius Obſerv. Chirurg. cent. 1. *obſerv.* 13. doth ſet downe foure. The teſtimonies and experiences of ſo many famous Authors, may perſwade any man, not contentious, that wounds of the braine ſometimes have beene, and yet may bee cured, or elſe none will.

Topicks for wounds of the braine.

Seeing I have laboured to perſwade you that the wounds dividing the ſubſtance of the braine it ſelfe may be cured; I thinke my ſelfe bound to acquaint you with the meanes, by the which ſo dangerous a curation is performed; which was the fourth point which I ſet downe to be diſcuſſed concerning wounds of the braine. *Ioan. Andræas à cruce Chirurg. lib.* 1. *c.* 14. Untill the fourteenth day be paſt, he will have the oyle of Turpentine, and the ſpirit of Wine to be applied: then hee will have the wound to be filled with this liquor following: ℞ *vini montan.* ℥xx, *ſucci beton.* ℥iiij, *ſucci calaminth.* ℥ij, *myrrh. oliban. aloes, ſang. dracon. centaur. minor. ſemin. hyperic. an.* ℥j, *contundend. contuſis macerentur omnia in vaſe probè occluſo: tum lento at claro igne exhalet tertia pars, ac coletur decoctum cui admiſce ſpir. vini* ℥vj, *ol. terebinthin.* ℥iiij. *Reponatur medicamentum in vaſe vitreo probè obturato.* Above this liquor apply *pulvis cephalicus*, and cover all with ſome fit emplaſter. *Corter. lib. obſerv. anatomic. & Chirurg.* counſelleth to foment the braine with a convenient decoction: ſuch an one is this which is made of Betony, Calamint, Saint *Iohns* wort, Camomill, Dill, Eye-bright, &c. boyled in red aſtringent wine. The wound he will have to be dreſſed either with the naturall, or ſome good artificiall Balſame, whereof I have ſpoken ſufficiently before. *Fallop. comment. in Hippoc. de vulner. cap. c.* 45. will have the oyle of Roſes, mingled with the oyle of Turpentine, to be powred into the wound; and that not without cauſe, for the oyle of Roſes is anodine, and the oyle of Turpentine warmeth and dryeth. This medicament he will have to be applyed untill the ſeventh day be expired; about which time moſt commonly appeareth a ſequeſtration of the corrupt portion of the braine from the ſound. If the ſubſtance of the braine, it being wounded, ſeeme to bee of livid

colour, and a ſtinking *ſanies* flow from the wound, then thoſe medicaments w^ch are dry and warme are to be applied, ſuch is this which followeth: ℞ *mel.roſ. & ol.roſ. an.* ℥j, *aq.vit.* ℥ij. *miſc.* When the wound yeeldeth a laudable quittour, then the oyle of Roſes is to be omitted, and only *mel roſat.* or *ſyrupus myrtinus*, or *ſyrupus è roſ. rub. ficcatis*, mingled with *aqua vitæ* are to be uſed. As it is an evill ſigne, if the ſubſtance of the braine be of a livid colour; ſo it the portion which muſt be ſeparate, repreſent a whitiſh haile-ſtone, and have not a very ſtinking ſmell, ſheweth that nature is ſtrong. *Hieron. Fabric. ab. aq. pend. part.* 2. *Chirurg. oper. lib.* 2. *c.* 20. delivereth this medicament, as an experiment of his owne: ℞ *farin. milii* ℥ß, *ol. Hiſpani* ℥j, *mithridat.* ℥vj, *balſami nigri na^lis* ℥iij. *aq. vit.* ℥v, *ol. de chal. cantho* ℥iß. *Miſc.* This is undoubtedly a good local medicament, becauſe the ingredients powerly drie and reſiſt putrefaction. This medicament I dare commend unto you: ℞ *balſami nigri, vernicis alb. & ol. hypericon. rubicundi facti ex multiplici infuſione florum hyperici an.* ℥ß *miſce.* This topick will warme, drie, reſiſt putrefaction, and hinder the entring of the ayre.

Of the ſymptomes which remaine after that a wound of the braine is cured.

Now the fift point concerning wounds of the braine is to be touched, which is to ſhew what ſymptomes remaine moſt commonly after that a wound of the braine is cured. Theſe then are they; the faltring in ſpeech, and a palſey in the armes. *Ioan. Andr. à cruce Chirurg. lib.* 1. *c.* 14. Deafneſſe. *Par. lib.* 9. *c.* 22. Decay of memory, ſtupiditie, and a weake judgement. *Coiter. lib. obſerv. anatom. & Chirurg. Et Fallop. lib. predict. cap.* 45. *Braſſavol. ad aph.* 18. *lib.* 6. *aphor. Hippoc.* The yellow Jandiſe. *Arc. lib.* 1. *c.* 6.

2. Of an abſceſſe of the braine.

The ſecond inconvenience which doth happen unto the braine is an apoſtemation. That this may happen, theſe underwritten Authors doe affirme; *Valeriol. lib.* 3. *obſerv.* 8. *Coiter. in obſerv. anatom. & chirurgicis. Fernel. de lue vener. c.* 7. *Par. lib.* 9. *c.* 8. And although moſt Authors doe pronounce this event to be deſperate; yet *Arcæus lib.* 1. *cap.* 6. relateth of one, upon whoſe head a ſtone of a cubit in bredth and length, and

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in thickneſſe twelve inches, but in weight foure and twentie lb. fell from the ingine, as it was hoiſted up to the building of a tower in *Valuerda*, and bruſed, depreſſed and ſhivered the skull: when this patient had lyen deſperate ſeven dayes, the eighth day three apoſtumes brake out, and within the ſpace of foure moneths the partie was perfectly cured, and afterward was married, for then he was but a young man.

Putrefaction and ſideration are deadly ſymptomes, which are not diſcerned but by opening of the skull, and that for the moſt part when the partie is dead. 3. 4. Of putrefaction and ſideration.

The firſt accident which happeneth to the braine, is a concuſſion or a commotion of the braine: If it be vehement, is is alwayes dangerous, and ſometimes deadly: If the commotion be violent, the partie becommeth ſpeechleſſe, according to *Hippocrat. lib. 7. aphor. 58.* where he ſaith; They who have ſuffered a ſtrong concuſſion of the braine, muſt of a neceſſitie become dumbe: reade *Galen* in his commentary upon this Aphoriſme. It is no other way to bee dreſſed than a fracture, when the *cutis muſculoſa* is whole. *Guilielm. Fabric. obſ. chirurg. cent. 1. obſerv. 7.* in this caſe anointed the whole ſcalp with the oyle of roſes and myrtils mingled together: opened a veine in the arme, and did inject ſharpe clyſters. After that a concuſſion is cured, ſometimes impediment of ſpeech, and forgetfulneſſe, may remaine during the reſidue of life, as witneſſeth *Parey li. 9. c. 22.* Hee will have bloud to be drawne plentifully out of the *cephalica vena*, according to the ſtrength of the wounded partie, to aſſwage the ſymptomes preſent, and to prevent the comming of more grievous. The head he will have to bee ſhaved: then hee adviſeth to apply a cataplaſme made of things cold and moiſt, as a cataplaſme of barly flower, oyle of Roſes and Oxymel. Thoſe medicaments which are very aſtringent, as *unguentum de bola &c.* are not to be applyed, becauſe they hinder the breathing of the fuliginous vapors thorow the ſutures, and other places of the skull; and ſo they are ſo farre from hindering of an inflammation, as that they increaſe it, if it hath ſeized upon the part already, Of a concuſſion of the braine.

already, and bringeth one, if there be none: ſharp clyſters he will have too injected to draw ſharp vapors from the head, and to hinder the aſcent of them to the ſame, and the veine of the forehead, and thoſe which are under the tongue, to be opened after the ſecond day, if bloud abound. Hee adviſeth that ſtrong frictions be uſed downwards, and that cupping-glaſſes be applyed to the ſhoulders. He will have the cooling and moiſtning aſtringent medicaments to be applyed untill the fourth day bee paſt: then diſcutient medicaments to be uſed; of the which medicaments I have ſet downe ſundrie formes often-times heretofore. If you apply diſcutient fomentations, then ſee that you heat not the head too much, leſt you cauſe paine and inflammation.

5. 6. Of a *Fungus.*

The fifth inconvenience which may happen after that there is a ſolution of unitie in the braine, is a *Fungus*, or the muſhrome of the braine.

What a *Fungus* is.

This is a tumor ſometimes hard, without bloud, and of ſmall ſenſe; ſometimes ſoft, of an exquiſite ſenſe, and of an ill ſmell, beneath narrow, and above broad, a kind of a maligne wart growing of the glutinous and thicke humors which are halfe rotten, congealed in the part, partly by reaſon of the aire, partly by reaſon of the coldneſſe of the skull, the skull being opened, and the braine wounded; even as muſhromes grow upon trees by a juyce which doth ſweat thorow the barke. *Galen lib. 1. de loc. affectis*, doth make mention of this ſymptome; *& lib. 3. Epidem.* ſaith, that thoſe excreſcences which grow in wounds, and are called *fungi*, are cauſed by the thickneſſe of the humor iſſuing from the affected parts.

The curation of a *Fungus.*

Although it fall off of it ſelfe ſometimes, which *Coiter. lib. obſerv. anatom. & chirurg.* affirmeth that hee ſaw the fleſh growing under it, depriving it of nouriſhment, yet if it increaſe, as it often doth, even to the bigneſſe of an hens egge in one night, as happened to *Guiliel. Fabric.* as he witneſſeth, *Obſerv. chirurg. cent. 1. obſerv. 15.* you muſt goe about to remove it with medicaments, which ſtrongly dry, and mildly fret;

fret; ſuch are the powder of Savin, Ocre, Hermodactils burned, the juyce of Purſelaine; the powder of the yellow Turbith, warily applied, ſurpaſſeth all theſe. If it grow above the *cranium* about the bigneſſe of an hen-egge, then with a ſtrong ligature you are to binde it, to procure the fall of it; then that which remaineth is to bee conſumed with the meanes above ſpecified. Beware that you uſe no ſtrong catheretical meanes. See *Par. lib. 9. c. 19. Guilielm. Fabricius* cured the *Fungus*, which happened to his patient, within the ſpace of fourteene dayes, with a fomentation, and a powder. The deſcription of the fomentation is this: ℞ *flor. & folior. beton. ſalv. chamomil. melilot. anethi, roſ. fol. major. roriſmar. an. man.* 1. *ſemin. aniſ. & fœnugr. an.* ℥j. *coq. iſta lento igne in aq. font. & vini rub. aſtringent. an.* ℔. 4. *ad conſumptionem* ℔. iiij, *deinde coletur decoctum.* The deſcription of the powder is this: ℞ *rad. cariophyllat. angel. calam. aromat. an.* ʒß, *rad. ariſtol. rotund. irid. guajaci, an.* ʒij, *ſalv. roriſmar. major. an.* ℥j. *fiat ex omnibus pulvis.*

The ſeventh and laſt accident which doth happen when the braine is offended, and the skull fractured, is a flatuous tumor. Of it *Guilielm. Fabricius* in the place afore-named ſo diſcourſeth: A tumor may be cauſed like to a *fungus* of flatuoſitie. If the weake heat of the braine goe about to concoct the matter in and about the wound, it doth raiſe up flatuoſitie, and ſeeing it can breathe out thorow the *pia mater*, it doth puffe it up; for, I obſerved (ſaith he) that in all thoſe in whoſe wounds a *fungus* grew, that the *pia mater* was whole, and only the *dura mater* torne; for when the *dura mater* is divided, nature out of hand goeth about to engender fleſh upon the *pia mater*, to defend it from the aire: wherefore, if ſuperfluous humors and flatuoſities gather about the wound, they lift up the *pia mater* and this fleſh, ſo that a tumor like to a *fungus* is cauſed: ſo he. 7 A tumor from flatuoſity.

If you demand how it is to be cured: I anſwer, that the fomentation and powder ſet downe by him to cure a *fungus*, will ſerve. The curation.

Now

Of the cauſes of the ſymptomes of wounds of the head.

Now to impoſe an end to my diſcourſes, concerning wounds of the hairy ſcalpe, ſeeing I have made mention of ſundry ſymptomes which enſue upon them; I will ſet downe the cauſes of the chiefeſt of them, and ſo conclude.

1 Of theſe, the firſt is a fall; this hath two cauſes: The firſt is the violence of the inſtruments which doe wound: The ſecond is the privation of the facultie of moving, with the which the inſtruments of moving ought to be endowed.

2 The ſecond ſymptome is *vertigo*, or giddineſſe: this proceedeth of the circulation, or circumvolution of the animall ſpirits; ſo when the clouds are driven, the Sunne and Moone ſeeme to move ſwiftly.

3 The third is dimneſſe of ſight: the cauſe of this is the diſſipation of the animall ſpirits.

4 The fourth is ſlumbering: the cauſe of this alſo is the diſſipation of the animall ſpirits; but it muſt be both greater, and more durable than in a dimneſſe.

5 The fifth is vomiting: this is cauſed by the communion of veſſels; for the braine being troubled, the affection is communicate by the nerves of the ſixt conjugation, which proceeding from the braine, are diſperſed thorow the whole bodie of the ſtomack. So the offence being communicate to the ſtomack, it is drawne inward and purſed, and turned upwards: from this inverſion of the ſtomack, firſt thoſe things which are contained in the capacity of it are rejected by vomiting; then thoſe humors which are drawne from the liver and the *cyſtis fellis*; and ſeeing choler is moſt light, it offereth it ſelfe firſt, and is firſt expelled.

6 The ſixth is a fever; this is cauſed by an inflamation, which hath ſeized upon the wounded part: This being communicate unto the heart by the connexion of the arteries, it is ſent from thence to the whole body by the ſame veſſels.

7 The ſeventh is *torpor*, or ſtupidity; this is cauſed of ill vapors, which by reaſon of putrefaction, or ſome other ill qualitie, aſſault the braine, and diſſipate the animall ſpirits.

8 The eighth is a convulſion: this is cauſed of corrupt vapors,

pors, which nip the beginning of the ſinewes, which either a putrid or maligne matter hath ſent out: in this caſe the neck, and the whole *ſpinalis medulla*, is to be anointed with a convenient medicament, ſuch as is this: ℞ *rut. marrhub. roriſmar. ebuli, ſalvie, herbæ paralyſis an. man.* β, *rad. irid. cyper. baccar. lauri an.* ℥j. *flor. chamemel. meliloti & hyperi an. pug.* 1. *Macerentur hæc per noctem in vini potentis lib. vi. deinde coq. cum ol. lilil. albor. lumbri cor. & terebinthin. ex ung. anſer. & human. an.* ℥iij. *ad conſumptionem vini igne lento. poſtea inſtituatur colatura, cui adde terebinthinæ venetæ* ℥iij, *aq. vit.* ℥j, *ceræ flavæ* ℥ij.

The ninth is a palſey, this happeneth, when as by a matter kept in the part offended, the braine and the beginning of the ſinewes are ſo affected, that all motion is taken away. 9

LECT. XXIV.

Of the curation of wounds of the face.

HAving delivered unto you, with what diligence I could, the curation of the hairy ſcalpe. Now I am to ſhew you how wounds happening in the parts, which are not ſo garniſhed with haire, are to be cured. Theſe are two, to wit, the face, and the inſtruments of the ſenſes: By the face, I meane the skin membranes, muſcles, and veſſels of the fore and laterall parts of the head.

Of wounds of the face.

And although that might ſuffice for the curing of the wounds of the face, which I delivered in the documents concerning the curing of ſimple wounds: yet becauſe the face hath two prerogatives above all other, which are not more principall than it ſelfe; it will not be amiſſe to ſpeake ſomewhat of the wounds of it in particular.

The prerogatives of the face.

For the face, firſt of all, is the ſeat of comelineſſe and beautie. Secondly, it is the ſureſt marke by the which one is diſcerned from another. Seeing then the face doth afford unto the beholders of it ſuch contentments, you ought to have a

ſpeciall care that you leave no foule cicatrix after the curation of the wounds of it, if you be called to cure them.

The differences of wounds of the face.

Wounds of the face are two-fold; for in them either the ſoft parts onely are wounded, or the bones alſo. If the ſoft parts only be wounded, then they are wounded either according to the length, and the rectitude of the *fibræ* of the muſcles and skin, or they are wounded tranſverſly.

The curation of a wound according to the longitude.

If the wound of the face be according to the longitude, the brimmes of it are to be brought together by a convenient ligature, and glutinative medicaments, refraining from ſtitching with needles; for when we uſe needles, new ſolutions of unitie are procured, and ſo new ſcarres, and the threed doth tranſverſly cut the skin, and cauſeth an ill favoured cicatrix, if it bee not ſpeedily taken away; beſides paine is cauſed.

Of rowling.

As for rowling, the rowler muſt not be broad, but narrow, and with two ends, that by ſundry circumvolutions, it may the better bring the brims of the wound together.

Of dry ſtitching.

As for glutinative medicaments, or dry ſtitching, as they are termed, I will commend unto you two:

1 The firſt is an emplaſter, the deſcription of it is this: R℞ *colophon. pic. naval. & ceræ an.* ℥ij, *terebinth.* ℥iſs, *maſtich. thur. ſarin. volat. calc. vivæ an.* ℥ij, *fiat emblaſtrum ſecundum artem.*

2 The ſecond is a powder, and it is this: R℞ *thur. maſtich bol. Armen. ſang. dracon. coloſon. calc. viv. alum. ſar. volat. an.* ℥ß, *fiat ex omnibus pulvis ſubtilis.* This powder is to be mingled with the white of an egge, untill it be brought to the conſiſtence of honey, and ſo to be applied.

Nota. One thing is to be noted, that the hemme of the cloth, upon which theſe medicaments are ſpred, bee applied towards the brims, and the raveled portion to the places diſtant from the brims. If the ſoft parts be tranſverſly inciſed, and the wound be long, the brims muſt gape being farre diſtant aſunder. In this caſe you muſt uſe ſtitching with needles to bring them cloſe together.

In

In stitching you are to observe these foure cautions: The first, that they be as thin as may be: The second is, that the threed be rather of flax than silk, but smooth, and waxed, that it cut not: The third is, that the needles be as small as may be, and either of silver or of steele distempered, which you may doe by holding of them in the flame of a candle: The fourth is, that when the brims of the wound doe abide together, and the swelling & inflammation of the brims are gone, we remove these stitches, and apply the dry stitches, which will fall out the third or fourth day: This you are to doe to prevent ill favoured scarres. If the transverse wound be not long, convenient rowling and dry stitching will serve, for the bringing and keeping of the brims together.

Cautions to be used in stitching.

When you goe about to cure such wounds, apply not pouders; for when the brims are brought together, some small distance must of a necessity bee left, which must be filled with flesh: If you then apply pouders which are both actually, and in faculty drying, the incarnation will be hindered, the pouders drying both too much and too soone: and so the scarre will be unequall, being lower than the rest of the skin.

Why pouders are not to be used.

Wherefore for the agglutination of such wounds, apply medicaments which in consistence are soft and moyst; but in faculty drying, for by application of such medicaments, nature hath time equally to agglutinate the brims, and the cicatrix will be more faire: which is that you ought to aime at in the curing of wounds of the face.

What medicaments are fit for the agglutination of such wounds.

Such are *Arcæus* his liniment: The Spanish balsame, the oyle of *hypericum*, having some turpentine or vernice mingled with it, and the naturall black balsame. In the winter time use the stictick emplaster, but in the summer *Diapalma*, or *emplastrum de minio*. If they bee to hard malax them with some of the oyle of *hypericum*. Procure skinning after agglutination, with *Unguentum de tutia, de cerussa, aut de bolo armeno*, or *ceratum griseum*.

Mans grease procureth a faire scarre.

When the skinning is almost induced, anoynt the part with

with mans greaſe: for it procureth by a peculiar faculty a faire ſcarre. See *Aq.pend. part.2.lib.2.c.21.*

How wounds of the face with offence of the bones are to be cured.

Now if a wound be received in the face, wherein both the ſoft parts and the bones are inciſed; we muſt in this caſe have a greater care of the ſecurity of the wounded perſon, than of the beauty of the face. In this caſe no kind of ſtitching hath place, if the wound bee large, and the offence of the bone great. For the bone muſt be ſmoothed with raſpatories, and the wound bee kept open while the bone ſcale, and the part be incarnate, even as hath beene taught in wounds of the hairy ſcalp, wherein there is a fracture of the ſcull. I will repeat nothing, becauſe I am unwilling to loſe any time.

If any enorme wound fall out, whereby there is a ſolution of unity in the jaw bones, as happened to *Arcæus* in one, whoſe upper jaw fell upon the chin: In this caſe all parts are to be reduced to their owne poſture, ſo that bones anſwer to bones, and the ſoft parts anſwer the ſoft; then the parts are to be kept in their naturall poſition, with all manner of ſtitching, and convenient deligation. Read the Authour in his firſt book cap. 7. I have acquainted you with the methodicall manner of dreſſing ſuch wounds heretofore; ſo that now in this caſe I will be ſilent.

So much I have thought good to deliver unto you, concerning the curation of wounds of the face in generall. Now it remaineth that I briefly diſcourſe of the wounds of the eye-browes, and eye-lids, and lips, before I handle the wounds which cauſe ſolution of unity in the inſtruments of the ſenſes.

Of wounds of the eye-brows.

Vulnus ſupercilii, a wound of the eye-brow is either cauſed by a ſimple inciſion onely, or by inciſion with the loſſe of ſome of the ſubſtance of the part. If it bee by ſimple inciſion onely, it is either according to the longitude or reſtitude of the *fibræ* or tranſverſe.

A wound by ſimple inciſion according to the length.

If the wound be cauſed by ſimple inciſion according to the length, without loſſe of ſubſtance, you may uſe the cephalick

phalick pouders, and ſuch as are aſtringent and drying, having no ſharpneſſe to haſten the unition, and procure skinning; for in this caſe you need not to feare an ugly ſcarre, for the part is decked and covered with haire.

If the wound of the eye brows be tranſverſe without loſſe of ſubſtance, then you muſt have a care that ſuch a wound be exactly agglutinate: and that the brims in the conjunction exquiſitly anſwer one another: for if theſe cautions be neglected, the wounded party ſhall not bee able to lift up the eye lid, unleſſe he uſe the aide of his fingers, and the eye ſhall ſtill remaine ſhut. In this caſe then you muſt take deepe ſtitches, and ſo many as ſhall ſeeme fit. The brims having beene thus joyned together, procure agglutination with ſuch medicaments as are able to reunite the parts ſevered. The curation of a tranſverſe wound of the eye-brow.

If a wound of the eye brow have cauſed a loſſe of ſubſtance, then you muſt not haſten the conſolidation of ſuch a wound: for if you do the ſcarre will become ſo hard, that the muſcle ſhall pull up to much the eye lid, and ſo the whole eye ſhall not be covered. In this caſe then you are to uſe ſuch ſarcoticall medicaments as are ſoft in conſiſtence, as artificiall balſame, of which I have ſpoken ſufficiently heretofore. The curation of a wound of the brow with loſſe of ſubſtance.

If this inconvenience happen, that by reaſon of the hard cicatrix the eye lid cannot wholly be pulled downe to cover the eye; then you are to divide the cicatrix by a ſemicirculär, or half-moone-like inciſion, according to the orbicular proceeding of the *fibræ* of the muſcle of the eye, which pulleth downe the *palpebra*. What is to bee done if the upper eye lid cannot bee drawne down.

Neither need you feare to make ſuch a half-moone-like inciſion, although it come neere to a tranſverſe inciſion; for this muſcle lyeth within the orbit of the eye, neere to the muſcles which move the eye, and ſo it cannot be hurt by ſuch an inciſion: for the inciſion muſt not reach to the internall tunicle of the eye lid; but onely divide the cicatrix and the round muſcle, which motion is not taken away by ſuch a half-moone inciſion.

Spigelius lib. 4. cap. 5. will have two muſcles to ſhut each The muſcles which move the eye lids.

eye lid, and to be of a ſemicircular figure: The one is ſeated in the upper eye lid, and draweth it downe, and is called the bigger: The ſecond and leſſer is ſeated in the lower eye lid, and pulleth it only upward. The upper eye lid is drawne up by the muſcle which proceedeth from the upper part of the *frons* or forehead, neere to the temporall muſcle, where the hairy ſcalp endeth. It goeth directly downe, and is inſerted into the eye brow. This muſcle then being tranſverſly cut a ſunder the eye lid can hardly be pulled up, unleſſe it be artificially united.

The curation of the wounds of the eye-lids.

Wounds of the eye-lids are either ſtraight or tranſverſe: Thoſe are ſtraight which reach from one corner of the eye to the other; becauſe this is the poſition of the *fibræ* of the ſemicircular muſcles of the eye, although they may ſeeme tranſverſe, if you behold onely the figure of the face. Tranſverſe I call thoſe which reach ſtraight downe from the eye brow, or *ſupercilium* towards the cavity of the eye. Theſe wounds either divide the outward skin and muſcles onely, or they cauſe a ſolution of unity in the internall membrane of the eye alſo.

Curation of the wounds in the eye-lids wherein the externall parts onely are wounded.

If the wound hath only divided the externall skin and the ſemicircular muſcle: You may uſe ſtitching, but then the needle and threed muſt be very ſmall, and the threed well waxed. Agglutination is to be procured by inſperſion of ſarcoticall and drying powders, as *bolus orientalis*, *terra ſigillata*, *ſanguis dragonis*, *ſarcocolla*, &c. thus you may mix them: R *bol. orient. & terræ ſigillat. an.* ʒij. *ſang. dracon. & ſarcocoll. an.* ʒi. *fiat ex omnibus pulvis ſubtilis.*

Above the powders apply a peece of a ſoft linning cloth, that it hurt not the eye by its hardneſſe, moyſtned with the white of an egge, which both hindereth inflammation, and ſtayeth the powder. Above this apply bowlſters, moyſtned with plantain water and red wine mingled together. Laſt of all rowle up the eye.

Fatty medicaments are to be ſhunned.

If occaſion move you to apply to the adjacent parts the oyle of roſes or any other, then you are to have a care that

no

no part of the oyle fall into the eye; for oyles doe hurt the eyes and cauſe inflammation.

If the wound cauſe a ſolution of unity in the internall membrane of the eye lid, which immediatly doth cover the eye, you are to ſtitch this. For if the threed ſhould touch the body of the eye it would offend it and procure an inflammation. In this caſe then a dry ſtitch is moſt convenient. What is to bee done when the internall membrane of the eye lid is wounded.

Wounds of the lips either cut a ſunder onely the skin of the muſculous parts, or the membrane alſo which internally covereth the mouth. If the skin and the muſculous parts be onely cut a ſunder, than ordinary ſtitching will ſerve the turne, and the application of ſuch medicaments as unite wounds inflicted into other parts of the body. The curation of the wounds of the lips.

If the whole ſubſtance of the lip bee ſeparate, and gape, then you are to dreſſe ſuch a wound as a hare-lip is, when as the brims are made raw. How wounds of the lips are to be cured, when they are quite cut thorough.

Firſt then you are to pierce both the brims of the wound with a needle or a pin, having on each ſide, a thin and ſmall peece of lead: Through both theſe peeces of lead, the needle or pinne muſt paſſe, then the threed is to bee twiſted about both the ends of the needle or pinne.

Laſt of all the point of the needle or pinne is to be nipt off, that it hurt not, with a paire of ſmall ſteele nippers well hardned. The leads ſuffer not the needle or pinne to breake thorow the brims of the wound: You muſt take this ſtitch ſome what deep, and about the middle of the wound, that the brims may be the more ſurely kept together. Two ordinary ſtitches more will ſerve, one above the needle or pin, the other below.

The pinne you may take out the fourth, fifth, or ſixth day, as you ſhall ſee the parts united. If you have children in hand, it is not amiſſe to joyne to theſe the dry ſtitch, becauſe they are unruly, and by their crying cauſe often the ſtitches to breake. When the pin is to be taken out.

The medicaments Topicall which procure conſolidation in theſe wounds are theſe. The black naturall balſame, and The Topicks.

not

not the yellow; In the winter you may uſe it alone, but in the ſummer tempered with a little of the yolke of an egge. The oyle of *Hypericum*, or the Spaniſh oyle, mingled either with ſome *Cyprian* turpentine, or the white joyners vernice are excellent. When all parts are agglutinate than you are to remove al the reſt of the ſtitches, & to procure a comely cicatrix by annoynting the parts, wherein there was ſolution of unity, with mans greaſe (as hath beene ſaid) if the wounded parties be girles or women: In boyes and men becauſe one may have, the other hath haires to cover the deformity of the cicatrix, you need not to be ſo ſcrupulous.

LECT. XXV.

Of the curation of wounds which happen to the inſtruments of the Senſes.

IT is time now to come to thoſe wounds which offend the inſtruments of the Senſes; and ſeeing the ſenſe of Seeing of all other, is moſt admirable and noble; the wounds of the eye which is the inſtrument of it, muſt firſt be handled: for it doth apprehend more excellent objects, more in number, and of a greater variety, with a greater celerity, than any of the reſt of the ſenſes doth, and in a farther diſtance. It is neceſſary for all living creatures to eſpy and prevent dangers and enemies. Beſides this the eternall felicity of reaſonable creatures ſhall proceed from the intuitive knowledge of the ſacred Trinity.

The cauſes of the difficulty of the curation of wounds of the eye.

As concerning wounds of the eye, two points offer themſelves to be diſcuſſed. Firſt, the difficulty of the curation of ſuch wounds. Secondly, The curation it ſelfe.

Five things make wounds of the eye of a hard curation. 1. Is the excellency of the part it ſelfe. 2. Is the exquiſit ſenſe of it. 3. The conſent which it hath with the braine: which

which you may eaſily gather: If either you reſpect the optick nerve, or the motory, or the muſcles of the eye, which have many twigges of nerves communicate from the firſt, ſecond, third, and eighth paire of nerves. Fourthly, the flux of humours, which promptly doth fall into the eye after it is wounded. Fifthly, the continuall motion of the arteries.

In the curation of theſe wounds two points are to bee delivered. Firſt, the differences of them. Secondly, the artificiall dreſſing of them.

The differences of the wounds of the eye.

As for the differences of them, wounds of the eye are either ſuperficiall or deepe. Superficiall I terme ſuch as paſſe not thorow the *cornea*: But deep, ſuch as paſſe thorow the *cornea*.

Generall obſervations in curing wounds of the eye.

In the curation of wounds of the eye, theſe two points are to be obſerved in generall. Firſt, that you abſtaine from all oyles, and fat things, for they inflame the eye, and cauſe paine. Secondly, that when one eye onely is wounded, you rowle up them both; Firſt, that the ſound eye may bee kept from motion: Secondly, that darkneſſe may every way bee procured; for light doth offend all ſore eyes: Thirdly, that the cure may be more eaſie; for when one eye moveth, the other of a neceſſity muſt move, and ſo the wounded eye being moved at the motion of the ſound eye uncovered, the curation will be hindered: for motion cauſeth inflammation, and protracteth healing. The third is, that the head lye ſomewhat high, not bending forwards, let the pillow bee of Turky leather, filled with chaffe.

The intention of curing a ſuperficiall wound.

To cure a ſuperficiall wound of the eye three intentions are required. Firſt, to prevent all inflammation, and flux of humours into the eye. Secondly, to mitigat paine. Thirdly, to unite the parts ſeparate.

To aſſwage paine, and repell the afflux of humours, uſe theſe things following: *ovi candidum, aq. ſpermatis ranarum, roſ. plantag. portulac. pluvialis vivis, mucilago ſemin. cydon. pſyllii, tragacanth. papaver. byoſcyam. decoct. muc. cupreſſi, gallarum, balauſt. malicor. vinum granator. lac mulichre, ſanguis turturum & pullor.*

pallor. columbar. ex venis ſub alis elicitur. Of theſe you may frame ſundry compoſitions unto your ſelves as need ſhall require.

Where the Topicks are to be applyed.

In this caſe it will ſuffice to apply theſe medicaments above the eye lid the eye being ſhut, unleſſe quittour abound, and the eye run much: for the skin of the eye-lid, the muſcle and the internall membrane are thin, ſo that the medicament may eaſily penetrat: Beſides, ſome will paſſe betweene the eye-lids. If the former accidents happen, waſh the eye with raine or plantain water, wherein a little alum or white vitrioll hath beene diſſolved; then apply bowlſters made of old fine linnin cloth, becauſe it is ſofteſt, moyſtned in ſome of the waters, wherein ſome of *ſief album ſine opio* hath beene diſſolved. If paine urge, uſe that which hath *opium* in it.

Repelling meanes.

To the forehead, temples, and cheekes, apply ſome anodine and aſtrigent cataplaſme, ſuch is this which followeth: ℞ *pulp. pomor. ſub cinerib. coctor.* ℥ij. *flor. caſſ. extract.* ℥vj. *mucag. ſemin. pſyll. alth. & cydon. an.* ℥ß. *far. hord. eribrat. bol. armen. ſang. draconis an.* ℥j. *Miſc. ut paretur cataplaſma.*

Nota.

One thing is to be noted, that if both the eye-lid, and the *conjunctiva tunica* of the eye bee wounded, that you have a care that they grow not together; which happeneth if it bee not prevented. You ſhall hinder this inconvenience, if in tender perſons you keepe them aſunder with ſome leafe gold, but in other bodies either with leafe-gold or tin foyle.

Of deepe wounds of the eye.

If the wound bee deepe, then either the weapon paſſeth through the broad and long chink about the ends of the bones of the *orbita*, through which the nerves come into the braine, or it goeth not ſo farre.

1. Wherein the braine is wounded.

If the weapon paſſe into the braine, then the wound is mortall, becauſe by reaſon of the diſſipation of the ſpirits, motion and reſpiration are aboliſhed. Nevertheleſſe, he is to be dreſt, and the Chirurgeon is blameleſſe, becauſe hee neither can ſee the wound, nor apply any Topicall medicament to the

the braine, unlesse hee take out the eye, which no wise man will attempt, nor can be suffered in whom the sense of feeling remaineth.

An example of this I saw in *Chester*, in a young Gentleman, whose surname was *Fletcher*, who in a duell being so wounded in the left eye, dyed about the fourteenth day after he received the wound: He continued well nine dayes, and the tenth day went to a play. The eleventh day the left nostrill began to runne as if it had beene a still, so that every night and day it wet a pillow: And so it continued untill he ended this life. A History.

If the wound be not so deepe, then either the aqueous humour onely issueth out, or the others, as the crystaline and vitreous also. 2. Of a wound not so deepe.

If the aqueous humour come out onely, then it commeth out wholly, or in part. If all of it come out, then the sight will be lost. If a small quantity onely come out, it may be repaired, and chiefly in children, by reason of their moysture, and so the sight remaine. This wound is cured as a superficiall wound. Of a wound wherein the aqueous humour commeth out.

If the other humours, as the vitreous and crystallin, come out, then the sight must of a necessity be lost. In the curation of this wound you are to use sarcoticall pouders, but beaten very small, and past through a fine searce, such are *tutia* prepared, *calaminaris* quenched in white wine, *terra sigillata*, *sanguis draconis*, *æs ustum*, *sarcocolla*, *sandaracha Græcorum*, *&c.* When the eye is healed, you may cause an artificiall glasse eye to bee set in place of the naturall, to avoid deformity. Of a wound wherein the other humours come out.

It falleth out sometimes that part of the wounding instrument sticketh in the eye. If a portion of the wounding instrument doth stick so fast, that it cannot be pulled out without the effusion of all the humours of the eye, and the procuring of great inflammation, and that doth not prick the eye-lids, then it is best to suffer it to remaine, and to dresse the wound with anodine medicaments, untill the seventh What is to bee done if portion of the weapon stick in the wound.

day be paſt, and then to uſe agglutinative means. But if the peece cauſe paine, and a continuall weeping, and hurt the eye-lids, it is to be taken out, and dreſſed as deepe wounds of the eye. See an example in *Fabric. ab aq. pendent. Chirurg. operat. part. 2. lib. 2. c. 27.* Next to the curation of wounds of the eye, I will ſhew how wounds of the Eare, which is the inſtrument of hearing, are to be cured.

Wounds of the Eare.

The eare is either wholly cut off from the temple of the head, or but in part divided. If it bee totally cut off, firſt of all it is to be skinned with ſtrong Epuloticall medicaments, as the Cephalick pouder, *Unguentum de bolo, de minio*, and ſuch like: Then the deformity is to bee covered either by wearing a long lock, or a cap under the hat having a ſide latch. If it bee divided but in a part, if the ſeparation be but ſmall, a dry ſtitch onely will ſerve; but if it bee large, a ſmall needle, and fine threed muſt bee uſed, that the parts ſeparate may bee proportionatly brought and kept together. Then ſtrong deſiccative topicks are to be uſed, becauſe the part it ſelfe is for the greateſt part cartilaginous.

Things to bee obſerved in ſtitching.

In your ſtitching you are to obſerve two things: Firſt, that the needle onely bring together the parts of the skin, on each ſide of the eare within and without, without wounding the cartilage: for if this bee done, an inflammation and gangren may enſue, as witneſſeth *Fabric. ab. aq. pend. oper. Chirurg. part. 2. li. 2. c. 33. & Par. lib. 9. c. 22.*

Why the hole of the eare is to be ſtopped.

Secondly, you muſt obſerve, that if the wound reach to the firſt cavity of the eare, called *Meatus auditorius*, the paſſage of hearing, you ſtill keepe a ſponge tent in it, partly that no ſpongious fleſh grow in it, which might ſtop it, and ſo hinder the hearing; partly that no quittour fall into it, which might exulcerate the parts internall, and corrupt the *Tympanum*, and ſo procure inevitable deafneſſe. So much then concerning the curation of wounds which may be inflicted to the eares.

Of the curation of wounds of the Noſe.

Now I will briefly touch onely the curation of wounds with the which the Noſe (the inſtrument of ſmelling) may be violat.

violat. Wounds then of the Noſe may onely cauſe a ſolution of unity in the ſoft parts, or in the hard parts alſo.

If a wound happen in the ſoft parts of the noſe, a dry ſtitch will ſuffice: In theſe wounds wee muſt to the uttermoſt of ourendevour labour to procure afaire cicatrix or ſcar: ſeeing the noſe is the moſt eminent part of the face, and but a ſmall ſear will eaſily be diſcerned in it: wherefore you are to procure a faire cicatrix with ſome medicament aſtringent and drying, but ſoft in conſiſtence: Such is *unguentum album caphuratum*, if it be faithfully diſpenſed. The differences.

If the hard parts be wounded, then this muſt fall out either in the upper part, and then the bone muſt be violated, or in the lower part, and then the cartilage muſt be hurt. How wounds of the hard parts of the noſe are to bee cured.

Wherefore if a wound be inflicted in the upper part of the noſe, wherein the bone is cut, then there is a wound and a fracture. In curing of ſuch a wound two indications offer themſelves: For firſt, the bones muſt orderly be ſet; then the conſolidation of the wound is to be procured. 1. In the upper part.

In placing handſomly the bones, you muſt put into the noſe a fit peece of wood, lapped with ſoft linnin cloth, which muſt eaſily goe in to beare up the bones: Then outwardly you are to ſet the bones in their beſt poſture, with your other hand. This being done, you muſt put a pipe into the noſe, of ſome light ſubſtance, as of the branches of the elder, the pith being taken out, or made of a thin plate of ſilver: For the preſent neceſſity you may uſe a Gooſe quill, or a Swannes quill, or a quill made of a reed, ſuch as Weavers uſe. Theſe quils or pipes muſt not bee exquiſitly round, but ſomewhat ſharp above, and flat below, to preſerve the naturall figuration of the noſe. How the bones are to be placed.

When you uſe theſe, you muſt obſerve two things: Firſt, that they be tyed to the night-cap on each ſide, that they drop not out: Secondly, that you put them not too farre up, leſt they cauſe ſneeſing, which much hindereth the conſolidation of ſuch wounds. Obſervations in applying the quils.

The uſes of the pipes.

Theſe pipes afford a foureſold uſe: Firſt, they keepe the bones in their beſt poſition: Secondly, they give way to breathing: Thirdly, they diſcharge the excrements of the braine: Fourthly, they make way for the ſending of the quittour from the wound. Theſe pipes muſt be lapped in ſome ſoft linnin cloth, to hinder the ſinking of the conſolidating medicaments into the wound.

The bringing of the parts together.

The bones being thus ſet according to art, you muſt labour to bring the ſoft brims of the wound together, either by a dry ſtitch, or with a ſmall needle and threed, according as the occaſion ſhall be offered unto you.

The topicks.

This being done, apply a deſiccative medicament to the wound, as *Sanguis draconis*, and *bole* beat to a fine powder, and mingled with the white of an egge beaten: let the conſiſtence be like to it of honey.

The cure of a tranſverſe wound.

If ſuch a wound be tranſverſe, firſt, you muſt apply to each ſide of the noſtrils a fine little bowlſter of ſoft linnin cloth, moyſtened in red aſtringent wine, and wrung out: then you muſt ſtay theſe bowlſters with a rowler, having a hole in the middle to give way to breathing, and to receive the tip of the noſe. This rowler muſt be ſowed to the back part of the head.

A note.

You muſt have a care of one thing, that it be no ſtraiter than is neceſſary for the keeping of the noſe from falling, for if it be too ſtrait, it will procure a poltfoot-like noſe fleering upwards. Hard to the *ſeptum* of the noſe apply another very narrow rowler, which bring about to the neck, as you did the other.

The curation of wounds of the lower part.

If the lower part of the noſe be deeply wounded, then the cartilage muſt ſuffer ſolution of unitie, which if it come to paſſe, then the cartilage is only divided, or quite cut off. If it be only divided, then unition is to be procured, a pipe to be uſed, drying medicaments to be applied, and the like rowling to be uſed as I ſet downe in the curation of a wound in the upper part of the noſe, wherein the bone is inciſed. If the

the cartilage be wholly cut off, then a new nose is to be framed of the skin of the arme: of this *Taliacotius* hath written at large, and I will touch this practice in my προσθετικὴν, which I made the third part of Chirurgerie.

To make an end of this Lecture, I must shew you briefly how wounds of the tongue (the instrument of tasting) are to be cured. If a portion of the tongue be altogether cut off, the losse is irreparable: for being once deprived of life, being separate from the rest of the living particles, it cannot by any create power be restored: Our Saviour restored *Malchus* his eare cut off by Saint *Peter*; but wee know that he was both God and man, the Lord of life, able to give it, or to take it from any, according to his good pleasure. If the part separate cleave to the sound part, although it be but by a fleshy threed, so that it doth totter hither and thither, yet beware that you cut it not off, seeing the losse of speech (the meane of mutuall conference) will so ensue. How wounds of the tongue are to be cured.

Such a wound is hardly cured: Partly because wee can neither use dry stitching nor rowling: Partly because ordinary topicks, as balsame and emplasters, cannot be employed. Prognosticks.

In this case you are to use stitching with needle and threed: But first of all the tongue is to be pulled out, being holden by the hand, it having beene lapped with a linnin cloth, or by hollow and rugged forcipes armed with cloth: Then so many and so deepe stitches are to be taken, as shall seeme expedient to keepe the parts united. Neither let us be too scrupulous with *Celsus li. 5. c. 26.* who thinketh that the lesse flesh the needle pierceth, the inflamation or paine will be the lesse: Rather let us bind sure, that we may still find sure. Wee may easily conjecture how the wounded party will be dishartned, if the stitches should breake. The wound being surely stitched, we must first cut off the threed hard by the knot, lest the ends of the threed, being entangled betweene the teeth, should cause a renting of that which yon did sow. The manner of stitching.

Secondly, wee must use astringent meanes, such are plantane Medicaments.

tane water wherein the ſyrupe of myrtils or dry redroſes, with ſome alum, have beene diſſolved. A decoction of the vulnerarie herbs, with the ſyrupe of quinces: *Saccharum roſatum* holden ſtill in the mouth, &c. As for his diet, he muſt be fed with liquid things, as almond milke, yolkes of egges diſſolved in broths, gellies, barley creame, thin oatmeale gruell, and thin panadoes.

The dyet.

LECT. XXVI.

Of the wounds of the veſſels of the throat.

The ſundry kinds of woũds of the neck.

HAving diſpatched wounds which may happen to the head, I muſt now fall to thoſe wounds which may offend the neck. Now theſe wounds cauſe ſolution of continuitie either in the common parts of the body, or in the parts proper. The parts common are the *cutis* and *membrana carnoſa*: The parts proper are the veſſels and the other parts. The veſſels aee three, the jugular veines, the ſoporall arteries, and the recurrent nerves. The other parts are the *larynx* or wind-pipe, and the gula or the mouth of the ſtomack, and the *Spinalis medulla*: of theſe I will diſcourſe in order as they are ſet downe. Thoſe wounds which happen to the common parts, the skin and the *membrana carnoſa*, require no particular tractation; for they are cured by joyning together the parts disjoyned, and by application of agglutinative topicks. Seeing theſe parts are looſe and flaggie, you may ſtitch theſe parts although there be ſome loſſe of ſubſtance. The reſt of the wounds which befall the other parts of the neck require a ſpeciall conſideration.

Wounds of the common parts.

Of the wounds of the veſſels.

Firſt then to come to the wounds of the veſſels: If the internall jugular veines, and ſoporall arteries, be deeply and largely wounded, the wounded party can hardly eſcape: Firſt, becauſe the wounded party doth flux to death moſt commonly

monly before any Chirurgeon can come to ſtay the bleeding: Secondly, becauſe no ſtrait ligature can be applied to theſe wounds, becauſe it might choake or ſtrangle the wounded party. *Celſ. li. 5. c. 26.* ſaith, *Periculoſa ſunt vulnera ubicunque venæ majores ſunt*: Thoſe wounds are dangerous whereſoever great veines are. *Hippoc. prorrh. lib. 2.* affirmeth thoſe wounds to be deadly, whereas the thick that is the great and large veines are wounded in the neck and groynes. Of the danger of theſe wounds, *Foreſt. obſ. Chirurg. li. 6. c. 4.* thus warneth us: The jugular veines receiving a great wound, hardly and very ſeldome are cured, becauſe they deprive a man of the vitall ſpirit, by reaſon of the large effuſion of bloud; and becauſe theſe wounds will not admit ſuch rowling for the ſtaying of bleeding as is neceſſary. *Guilhel. Fabric. cent. 4. obſ. 2.* maketh this manifeſt by an example: when a certaine empyrick went about the cutting out of a *ſtruma* in the neck of a Genevian maid, which had incloſed the jugular veine and the recurrent nerve, ſo great a flux of bloud enſued, that the maid dyed in the very operation. The like chance happened to one Maſter *Blackwel*, who going about the like operation in a young gentlewoman, then lying in Alderman Berry, had no better ſucceſſe. Maſter Doctour *Gavin* and I were then preſent. Let theſe and the like examples procure warineſſe when you goe about to deale with tumors in the laterall parts of the *Ingulum* or throat.

In ſuch wounds, a wound of the arterie is more dangerous than of the veine: Firſt, becauſe the bloud of the arterie is more fluxible and more ſpirituous: Secondly, becauſe the coats of the arterie are hard, and are in continuall motion.

Why the would of an arterie is more dangerous, than of a veine.

You ſhall know an arterie to be wounded by theſe ſignes: Firſt, the arteriall bloud guſheth out forcibly and leaping, when the arterie is dilated; but in the conſtriction the bloud is drawne back. Secondly, the arteriall bloud is thinner; but the venall thicker. Thirdly, the arteriall bloud is of a bright red colour; but the venall is blacker. Fourthly, the

Signes of an arterie wounded. *Avicen. 4° 4ti, tract. 2. c. 16.*

arteriall bloud is much hotter than the venall. Fifthly, the arteriall bloud when it iſſueth out is more full of ſpirits than the venall.

The curation of ſuch wounds

As for the curation of ſuch wounds, the firſt ſcope is to ſtay the flux of bloud, which is the ſtore-houſe of the vitall ſpirit: the ſecond, is to agglutinate the wound.

How bleeding is ſtayed.

The bleeding is ſtayed two manner of wayes; by medicaments, and by deligation: The medicaments are either reſtrictive or eſcharoticall.

Reſtrictive meanes.

This reſtrictive medicament may ſerve in ſtead of all others: R *thur.* ʒij, *aloes, ſanguinis draconis, telarum aranearum, quæ in molis plenæ ſunt farina volatili, hypocyſtidis, maſtiches, ſarcocollæ, terræ umbræ, pulveris volatilis fungorum an.* ʒj. *fiat ex omnibus pulvis ſubtilis.*

Eſcharoticall meanes.

The eſcharoticall meanes, are either medicaments which procure a cruſt or an actuall cauterie. This medicament which followeth, ſhall ſerve for all other eſcharoticall meanes, R *pulv. prædict.* ʒij, *calc. vivæ* ʒj, *arſenic. ſublimat. & auripigmenti an.* ʒß, *fiat pulv. ſ. a.*

The manner of application.

Theſe powders, according to *Galen. lib.* 5. *method. c.* 4. muſt be mingled with the whites of egges, ſo that the medicament be of the conſiſtence of honey: Then the haires of a Hare are to be added; you muſt fill the wound with doſils armed with theſe medicaments, and apply large pledgets above the doſils, and about the wound, armed in like manner, with the ſame.

Seeing you cannot uſe ſtrait rowling about the neck for feare of choaking, you are to have in readineſſe three or foure ſervants to keepe to the wound the medicaments, that they fall not off, by their turnes; theſe medicaments muſt lye to the wound three dayes: then when you goe about to remove them, when you are come to the lowermoſt doſils in the wound, if they ſtick, you are not to remove them, leſt a freſh flux be cauſed; only the reſt of the wound is to be filled up with freſh ſtuffe.

The actuall cautery.

As for the actuall cautery, it muſt be red and glowing hot; for

for then it procureth a cruſt moſt ſpeedily, and that the thicker. This being done, we are with all expedition to procure incarnation, leſt the cruſt fall before fleſh be engendred, and ſo the breach become greater, and the flux of bloud larger. If you labour to engender fleſh above an artery, you are to uſe ſarcoticall powders, which ſtrongly drie.

When the fleſh is engendred, if you by applying your finger feele ſtrong beating, you are to feare leſt an *aneuriſma* enſue: when you have performed all theſe directions, it will not be amiſſe, above and round about the wound, to apply this cataplaſme: R *fol. ſolani, hyoſcyami, mandragor. contuſ. an. m.ſs. 1. far. hord. & pulv. malicor. an. q. ſ. ut paretur cataplaſma ſine ulla coctione.* A ſigne of an aneuriſme like to enſue.

If theſe meanes will not prevaile, then you are to binde the veſſell which bleedeth: Firſt then, you are to lift up the veſſels from the ſubjacent and adjacent parts with a ſmall ſilver hooke; then you are to binde them above, and under the wound ſtrongly, and to cut them aſunder betweene the deligations: This is the ſureſt way, ſeeing there are innumerable *anaſtomoſes* of the veſſels in the body of man, and ſo bloud may eaſily flow from either ſide of the wound: wherefore it is neceſſary that they both bee bound. Seeing theſe wounds are extreme dangerous, you cannot be too circumſpect in curing of them: if therefore a learned Phyſitian cannot be had, you muſt ſee that he uſe a convenient diet. A cataplaſme. Binding of the veſſels.

His diet then muſt bee ſlender, cooling, glutinous, and ſomewhat aſtringent, that no great ſtore of bloud be engendered, that it may bee cooled, made thick, and ſo leſſe apt to flow; wherefore fleſh, egges, and ſtrong drinkes are to bee ſhunned. The party may eat Lettice, Purſlane, Endive, Spinach, Sorrell, Barly-creame, Pompions boiled. As for fruit, he may eat Quinces, Medlars, Pomegranets, Prunes, Peares baked or ſtewed, Sloes ſtewed. As for fleſh, he may eat calves and ſheepes feet ſtewed, calves and ſheepes heads boyled, and their braines with greene-ſauce, made of the common Sorrell, and wood-ſorrell, vineger of Roſes, and a little Sugar: Let The dyet.

the bread be courſe and leavened: Let the drinke be ſpring-water, wherein ſteele hath beene quenched, beveredge of vineger and water, the juyce of Pomgranets, Barly-water, the juleps of Roſes and Violets, ſpring-water and verjuyce. If the partie be weake, let him, or her, feed upon mountaine birds, poched egges, Partridges. In ſpring-water, wherein the bottome of a loafe hath beene boyled, diſſolve the ſirup of Succory, Purſlaine, red Roſes, Myrtill, and ſuch like: If wine be required, let it bee deepe coloured and aſtringent: ſuch are the red wines, whereof here they make their Clarets and Allegant. The body muſt bee kept ſoluble, and all perturbations of the minde, but chiefly vehement anger, are to be abandoned. If the partie ſleep not well, it is to be procured by art: this medicament w^ch followeth is very convenient & fit: ℞ *diaſcor.* ℥j, *philon. Perſici* ℈i, *ſyrup. papav. albi* ℥vj, *aq. papav. errati* ℥iij. *Miſc. ut paretur potio bibenda frigida hora* ix. *veſpertina*; you may miniſter this potion every third night.

Wounds of the recurrent nerves.

The third veſſell which is to be found in the laterall parts of the *jugulum*, or throat, which is remarkable, is the *recurrent nerve*, ſo called, becauſe it commeth downe from the ſixth paire of ſinewes, and returneth upwards towards the muſcles of the larynx, uſing in the left part the trunck of the *aorta*, and on the right ſide, the axillar artery, as pulleyes. If one of the recurrent nerves be cut aſunder, the voice becommeth hoarſe, but if both be divided, the ſpeech is taken away; and ſeeing they greatly further the ſpeech, if they be whole, and hinder it, if they ſuffer ſolution of unity, they are called not onely *nervi recurrentes*, *recurſivi*, and *reverſivi*, but *vocales* alſo.

A balſame conſolidative.

To conſolidate theſe, and the wounds of the veines and arteries, this Balſame of *Ambroſe Parrey* ſet downe, *li.* 10. *c.* 29. is excellent: ℞ *ol. hyperic. ſimpl.* ℥iiij, *gum. elemni* ℥iij, *terebinth. Venet.* ℔. ß. *liqueſcant iſta ſimul ac colentur. Cùm frigere incipiunt, adde boli Armen. ſang. dracon. an.* ℥j. *irid. Florent. aloes, mirrh. maſtich. pulverizat. an.* ℥j, *aq. vitæ* ℥ij. *Miſce ex. l. a.* Apply the Balſame warme. Above the Balſame apply the *diapalma* malaxed in oyle of Roſes to hinder all inflammation.

Lect.

LECT. XXVII.

Of the wounds of the other parts of the necke.

HAving delivered unto you, in my former Lecture, the method of curing the wounds which may happen to the vessels seated in the laterall parts of the necke; I am to shew you how wounds, which cause a solution of unitie in other parts of the same, are to be cured. Now these members are seated either in the forepart of the necke, or in the backe-part: In the forepart the *trachea arteria*, or wind-pipe is placed; but in the back-part the *gula*, or the mouth of the stomack, and *spina dorsi*, or *spinalis medulla*, the marrow or pith of the back-bone.

If the *aspera arteria*, or wind-pipe, bee wounded thorow: First, the breath will come out at the wound. Secondly, bloud will issue out at the mouth. Thirdly, the speech will be hindered. Fourthly, coughing will trouble the wounded partie. Signes of the wind-pipe wounded.

The wind-pipe hath three parts: First, the uppermost part of it, called *Larynx:* The second *Caudex*, or the stumpe: The third, the branches spread thorow-out the substance of the lungs. The portions of it.

Wounds of the *Larynx*, although they be not mortall of themselves, yet by accident they may become such: First, by reason of the necessary use, for it doth receive, and breathe out the aire. Secondly, by reason of the fearfull symptomes or accidents which accompany such wounds; for this part is neare to the jugular veines and soporall arteries: so that it can hardly bee wounded, unlesse these parts bee wounded also. It hath also sundry branches of the recurrent nerves, and besides sundry muscles; so that a great flux of Prognosticks. I

bloud, paine, inflammation, purſing or drawing together, and at laſt ſtrangling may enſue. Thirdly, becauſe this part can hardly be cured; for medicaments cannot eaſily bee applyed or kept to the part.

2 Wounds of the *Caudex fiſtula*, or of the ſtumpe or pipe, although they are not ſo dangerous as thoſe of the *larynx*, for the reaſons before alleaged; yet they are not without danger, for it is framed of a double ſubſtance; for the rings called *annuli* are cartilaginous: but the ſubſtance which tyeth theſe together, is membranous. Now a cartilage cut aſunder, doth not admit unition, according to *Hippoc. aph. li. 6. aph. 19.* who ſaith, When the bone is cut, or a cartilage, or a nerve, it neither groweth againe, nor is united; underſtand this by a middle of the like ſubſtance. He repeateth this ſame, *lib. 7. aphor. 28. Galen* ſubſcribeth to this Aphoriſme, *5 method. med. c. 7.* Three cauſes may be alleaged for this: Firſt, becauſe a cartilage is a part dry, without bloud, and hard. Secondly, becauſe the cold aire doth continually paſſe thorow the ſtumpe. Thirdly, becauſe it is ſeldome at reſt, but ſtill in motion. You may adde another reaſon, becauſe the aire doth not freely paſſe and repaſſe by it, chiefly if the wound be deep and large. Of theſe wounds thus writeth *Vidus Vidius de curat. morb. membrat. li. 8. c. 6.* Wounds which paſſe thorow the wind-pipe, moſt commonly cauſe ſpeedy death, by reaſon of the bloud which iſſuing out of the jugular veines, falleth upon the lungs, and hindereth breathing: And *Foreſt. obſerv. chirurg. lib. 6. obſerv. 4.* thus writeth of them: Large wounds of the *aſpera arteria*, chiefly thoſe which divide the cartilaginous ſubſtance of it, ſeldome are cured; for this part is hard, and without bloud: beſides this, the wounded party doth draw breath by the wound, which hindereth conſolidation.

The curation of the wounds of the *trachea arteria*.

As for the curation of ſuch wounds: if the wound bee tranſverſe, then the wounded party muſt bend downe his head: If the wound be ſtraight, according to the length of the pipe, then the partie is to hold up his head, that the brims of the wound may be brought together: then the wound is

to

to be ſtitched as firmly and artificially as you can: Pins in this caſe are beſt, as alſo in curing a hare-lip, for all kindes of threed will eaſily rot. This being done, agglutinative medicaments are to be uſed. *Arcæus* liniment is good, and the naturall black balſame: Above apply *diachylon ſimplex* malaxed with oyle of Myrtils or Quinces. In your dreſſing, you muſt have a care that neither bloud nor quittour fall upon the wind-pipe, leſt it procure choaking; but that they bee outwardly diſcharged in the depending part. If after dreſſing, the party breathe with difficulty, and there is danger of ſuffocation, becauſe the cavity of the *larynx*, or *fiſtula*, is filled with bloud, or quittour, or both; or becauſe it is ſtraitned by reaſon of a great inflammation: then the wound is to be dilated, and a ſilver pipe, a little bended towards the point, that it hurt not, to be kept in it, untill the wounded party be able to breathe freely; then let it be taken out. In this wound gargariſmes are good: Take this as a paterne: ℞ *hord. mund. ſt. cochl.* iij. *flor. roſ. rub. pug.* 1. *ſumach. flor. granat. an.* ℥ij. *paſſul. major. excoriat. jurub. an.* ℥ß. *glycirrhiz.* ℥j. *Bulliant iſta. ſ.a. in lib.* iij. *aq. font. ad conſumpt. medietat. ac colatur decoct. cui admiſce mell. roſ. & ſyrup. myrtin. an.* ℥ij: *utatur gargariſmate calefacto.* It moiſtneth the mouth, aſſwageth paine, agglutinateth the parts, and cauſeth the party to breathe freely.

Wounds of the *gula*, *œſophagus*, or mouth of the ſtomack doe follow. That the mouth of the ſtomack is wounded, you ſhall know by theſe ſignes: Firſt, if the wound be deepe, the meat and drinke will come out of the wound. Secondly, the difficulty of ſwallowing. Thirdly, the hicket and vomiting of choler, fainting, a faint pulſe, cold ſweats, coldneſſe of the hands and feet, according to *Fernel. lib.* 7. *μεθοδ. cap.* 8. Fourthly, the vomiting of meat and drinke according to *Celſus, lib.* 5. *c.* 26.

Wounds of the mouth of the ſtomack. The ſignes.

As concerning the variety of theſe wounds, receive theſe kindes of them: Firſt, either the whole *gula* is cut aſunder, or it is only cut in part. Secondly, if it be cut but in part, then it is wounded neere to the ſtomack, or farre from it. Thirdly,

The differences of theſe wounds.

Thirdly, it is wounded, either ſtraitly or obliquely.

The prognoſticks.

Concerning wounds of the *gula*, receive theſe prognoſticks. Firſt, all wounds of the *gula* are dangerous: Firſt, becauſe they cauſe difficultie of breathing: Secondly, becauſe it can hardly be wounded unleſſe the wind-pipe, the jugular veines, the ſoporall arteries, and the recurrent nerves bee wounded alſo. Thirdly, theſe wounds which are but ſmall, ſtrait, and remote from the mouth of the ſtomack, are leſſe dangerous. Fourthly, wounds great, tranſverſe, and neere to the mouth of the ſtomack, admit no curation according to *Guido tract. 3. doct. 1. c. 1.* Firſt, becauſe the paſſing of the meat and drink doth hinder the conſolidation. Secondly, becauſe the place is ſtill moyſt. Thirdly, becauſe its office, which is to carry meat and drink to the ſtomack, is moſt neceſſarie for the ſuſtentation of the life of man. Fourthly, becauſe an inflamation may eaſily bee communicate to the upper orifice of the ſtomack, which is very nervous, which the Grecians call καρδια the heart, and whoſe pains are called καρδιαλγίαι or καρδιογμοι. Fifthly, if it be wholly cut aſunder, the curation is impoſſible, for one part ſhrinketh upwards, and the other down-wards. As for the curation of theſe wounds; The firſt intention is by ſtitching, to bring the brims of the wound together: yet care muſt be had, that an orifice be left in the depending part, to be kept open with a tent, that the quittour may be diſcharged, and that meat ſtick not there, which might cauſe inflammation. Then ſuch medicaments are to be applyed as I ſet downe, for the curation of the wounds of the wind-pipe.

The curation of theſe woũds.

The dyet.

In theſe wounds a ſpeciall regard muſt be had of the dyet: Seeing then the wounded party can hardly ſwallow, his food muſt be liquid, and it muſt nouriſh much. Such are goats and aſſes milke, wherein *Saccharum roſatum* or *violatum* are diſſolved: broths made of fleſh wherein the yolkes of egges are diſſolved, almond milk, and the emulſion of the great cold ſeeds drawne with chicken broth, &c.

Nutritive clyſters.

If the party cannot ſwallow at all, then nutritive clyſters are

are to be miniſtred: for the liver by the Meſaraicall veines may draw nouriſhment to it ſelfe, to feed it ſelfe and the reſt of the body. But firſt of all the excrements are to be driven out of the guts by a purging clyſter. Receive this as an example: ℞ *elect. lenit.* ℥i ß. *mellis roſati* ℥ii. *ſacchari rubri* ℥iij, *decoct. communis pro clyſteribus* ℥x. *Miſc. ut paretur clyſter.* Then inject clyſters made of ſuch things as have beene ſet downe for the dyet. Miniſter halfe a pound at a time, that the party may keepe it the longer: Into theſe nutritive clyſters no oyle muſt enter, becauſe it will too much lubrifie the guts; nor ſalt or ſugar, becauſe they will procure too ſpeedy expulſion of the clyſter.

Now I am to come to the wounds of the *Spina dorſi*, the back bone ſeated in the back part of the body: If the wound paſſe not to the *Spinalis medulla*, then it either divideth the muſcles, and then the wound is to be dreſſed, as thoſe which happen in fleſhy parts: If the bone be hurt alſo, then it is to be dreſſed as wounds of the head wherein is a fracture, of the which I have diſcourſed heretofore at large. Of wounds of the back bone.

If the *Spinalis medulla*, or the marrow of the back bone be wounded, then it is either wholly cut aſunder, or but in part only: If it be wholly cut aſunder, then the whole body is deprived of moving and feeling, and by conſequence breathing it ſelfe muſt be hindered, and ſo death muſt enſue. If it be not wholly cut aſunder, but wounded onely, then a fearfull convulſion muſt of a neceſſitie enſue, and ſo for the moſt part death. The divers kinds of them.

Celſus li. 5. c. 26. hath theſe ſignes: A palſie or convulſion followeth, feeling is loſt, and after a while the party cannot retaine ſeed, urine or excrements of the belly, yea; a totall ſuppreſſion of the excrements ſometimes will enſue. The ſame ſignes hath *Fernelius li. 7. patholog. c. 8.* If the *Spinalis medulla* (ſaith hee) be wounded, the inferiour parts become paralytick, their feeling, moving, and functions are loſt; ſo that the excrements, urine and ſeed, now and then come from the party againſt the will. If the convulſion hap- The ſignes.

pen to the armes, then it is likely that the ſinewes which ſpring from the fifth, ſixth, and ſeventh *vertebræ* of the neck are wounded; if the legges ſuffer theſe accidents, then the ſinewes of the *vertebræ* of the loynes, and *os ſacrum* are offended.

Prognoſticks. As for the prognoſticks; ſeeing the *ſpinalis medulla* is of the ſame nature whereof the braine is, *Gal. li. 3. de temperament. c. 3.* and neere unto the braine, *lib. 3. al. facult.* and is derived from the braine, *lib. 16. de uſu part. c. 2.* and reſembleth a compact braine, *lib. 1. de mot. muſcul. c. 1.* and ſeemeth to be as it were another braine under the head and neck, *li. 12. de uſ. part. c. 11. & 15.*

Why theſe woundsare dangerous. The wounds of it are no leſſe dangerous than thoſe of the braine. Firſt, becauſe it hath its originall from the braine. Secondly, by reaſon of its compoſition, becauſe tis covered with the *dura* and *pia mater*. Thirdly, by reaſon of the nerves which ſpring from it. Fourthly, by reaſon of the conſent which it hath with the braine. Fifthly, by reaſon of its action and uſe, becauſe it doth communicate moving and feeling to the parts. Sixthly, by reaſon of the ſituation of it: for it lyeth deepe in the body, ſo that the force of the topicks can hardly reach to it. Seventhly, by reaſon of the ſymptomes; for it being wounded, a palſie, convulſion, and privation of moving and feeling doe enſue.

2 *Foreſt. lib. 6. chirurg. obſerv. c. 6. de his ita pronunciat*: If the *ſpinalis medulla* be wounded about the beginning of it, death of a neceſſitie muſt enſue, becauſe a convulſion of the whole body will follow; but if it be wounded in the lower parts, the wound is not alwayes deadly, unleſſe the wound be a large one, or it be a puncture, although a convulſion doth alwayes enſue; ſo that it is not ſo dangerous as that which is received about the beginning; and *Fallop. de vulnerib. capitis cap. 2.* hath theſe words: Wounds of the *ſpinalis medulla* are accounted deadly by *Hipocrates* in *Coac. Prænot.* yet I have ſeene them ſometimes cured; but if the wound happen to be in the upper part, death and a convulſion of the lower parts muſt enſue.

Howſoever,

How a wound of the *spinalis medulla* is to be dressed.

Howsoever, seeing the wounded party must be dressed, thus you shall goe to worke : you are to powre into the wound such things as asswage paine, stay convulsions, and which procure digestion without biting and sharpnesse: Such are unctuous and fat topicks, as this medicament is : ℞ *ol. hyper. & de luteis ovor. an.* ℥i. *terebinthin.* ℥ß, *theriac. Andromachi* ℥ij. *Misceantur.* Secondly, you must anoynt the whole back-bone with such a medicament. ℞ *ol. vulpin. hirundinum & lumbricor. an* ℥i. *ol. mastichini, & de castor. an* ℥ß. *Misc.* Thirdly, you must embrocate the whole scalp with this or the like medicament : ℞ *ol. chamemel.* ℥i. *ol. lumbricorum* ℥ß. *Misc.* These meanes are to be applied warme.

Lect. XXVIII.

Of wounds of the brest.

Differences of wounds of the brest.

WOunds of the brest are either not penetrating to the cavity of the brest, or else they doe penetrate. Those that penetrate are either without offence done to any part contained therein, or some part or parts are wounded.

Signes of a penetrating wound.

You shall know the wound to penetrate by these signes: If the patient shut his mouth and nose, the breath will breake thorow with a noyse, so that it will move and dissipate the light of a candle set neere to the wound : And the patient will be troubled with the difficulty of breathing. If the parts contained be wounded, you shall know which of them is wounded by the proper symptomes, with the which the patient is troubled, as followeth.

Signes of the heart wounded, see *Celsi. lib. 5. c. 26. Foresti. lib. 6. obs. chir. obs. 47. Fernel. li. 7. Pathol. c. 8.*

If the heart be wounded, much bloud gusheth out, a trembling possesseth all the members of the body : the pulse will be small and weake : the colour of the face will become very pale : a cold sweat, and frequent swouning will assaule the

wounded party: and when the limmes grow cold, death is at the doore.

Signes of the Lungs wounded, read *Fernel. pathol. li. 7. c. 8. Rondelet. de dignoſc. morb. c. 21. Celſ. li 5. c. 28.*

If the Lungs bee wounded, it will bee diſcerned by theſe ſignes: The blood which commeth out of the wound is yellowiſh and froathy; a cough enſueth: the patient hath difficulty of breathing, and a paine in the wounded ſide, which before he had not: he lyeth at greater eaſe when hee lyeth on the wounded ſide; but being turned on the contrary ſide, theſe eaſements are abated.

Signes of the Midriſe wounded.

When the Midriſe is wounded, theſe accidents follow: The party is troubled with a heavineſſe of that part: hee is taken with a raving, by reaſon of the branches of the nerves of the ſixth conjugation of the braine, which are ſpred thorow the body of it: difficulty of breathing, a cough, a ſharp paine, and fever will trouble the party wounded: Yea, the ſtomack and guts ſometimes by the vehemencie of breathing will be drawne up into the capacity of the cheſt thorow the wound, as once happened to *Ambroſe Parrey*, as he confeſſeth *lib. 10. c. 30.*

Signes of a veſſell wounded.

That a veſſell is wounded, and blood powred forth into the capacity of the breſt, you ſhall know by theſe ſymptomes: there will bee a difficulty of breathing; the fever will increaſe; hee will vomit bloud; afterward the bloud putrifying the breath will ſtink; his appetit will bee loſt; he will have a deſire to vomit; he deſireth to ſit up, and often fainteth, noyſome vapours aſſaulting the heart, being raiſed up from the putrefied bloud.

The prognoſticks.

As for the prognoſticks of wounds of the breſt, receive theſe.

Firſt, wounds of the breſt which either pierce not to the cavity, or if they be penetrant, and hurt neither veſſell nor entrall, are not deadly, but may ſpeedily and eaſily be cured if a methodicall courſe be taken.

Wounds of the great veſſels.

Secondly, if the great veſſels whether they be veines or arteries be wounded, they cauſe death. See *Celſus lib. 5. c. 16.* and *Hippoc. prorrhet. lib. 2.* becauſe they ſpend a man by great effuſion

effuſion of bloud, which can hardly bee ſtayed for two reaſons: Firſt, becauſe they lye deepe in the body, ſo that neither can they be bound, nor medicaments conveniently be applyed to them: Secondly, becauſe the coats of them are membranous, and ſo cannot bee healed by the firſt intention: yet if the arteries bee divided, the wound is the more dangerous:

Why an artery divided is more dangerous than a veine.

Firſt, by reaſon of the bloud contained in it; for it is more ſpirituous than that in the veines.

Secondly, by reaſon of the flowing of the bloud; for ſeeing the bloud of the arteries is more ſpirituous, and hotter, it doth leaping iſſue out, ſo that it can hardly be ſtayed.

3 Thirdly, becauſe of the coats of the arteries; for they are harder than thoſe of the veines, and ſometimes become cartilaginous.

4 Fourthly, by reaſon of the hard conſolidation of the coats of the arteries; for they are ſtill in the motion of dilatation and conſtriction; but conſolidation doth require reſt, as *Galen* obſerveth, *lib.* 5. *Method. c.* 8.

Fifthly, by reaſon of an *Aneuriſma*, which moſt commonly remaineth after that a wound is cured, wherein an artery hath beene divided.

Of wounds of the lungs.

As for wounds of the lungs, they are either ſuperficiary and ſmall, or deepe, wherein the ſubſtance of the lungs are wounded, and the great veſſels divided: thoſe may be cured; theſe are deadly for eight cauſes:

1 1. Becauſe they are in continuall motion.

2 2. Becauſe the lungs are very moyſt, and ſo ſubject to inflammation and putrefaction.

3 3. Becauſe the medicaments can hardly reach to the bottome of the wound.

4 4. Becauſe the diſcharging of the quittour (which is requiſit for curation) is both hard and dangerous; hard, becauſe it muſt bee diſcharged by expectoration by the upper parts; dangerous, becauſe this muſt be performed by coughing, by the which the wound is more torne.

5 5. Becauſe a fearfull flux of blood muſt enſue, the *vena arterioſa*, and the *arteria venoſa* being wounded, and ſo many vitall ſpirits muſt ruſh out together, with this ſpirituous bloud.

6 6. Becauſe great plenty of bloud muſt fall into the capacity of the breſt, which firſt by its heavineſſe muſt preſſe downe the diaphragma, and cauſe difficulty of breathing; and afterward, being turned to quittour, acquireth a maligne quality, and ſo may procure a fever, raving, and a convulſion; yea in proceſſe of time *Empyema*, and laſt of all a *pthyſis* and hectick fever, the acrimony of the quittour corroding the tender ſubſtance of the lungs: That *pthyſis* doth enſue after an *empyema*, *Hippoc. lib. 5. aph. 15.* witneſſeth.

7 7. Becauſe the entring of freſh aire into the lungs, and the expulſion of fuliginous vapours from the heart are hindered.

8 8. Becauſe the heart muſt of a neceſſity be affected by conſent, for the lungs are in ſtead of a pillow, and fanne to the heart, and hath its veſſels from the heart, to wit, *vena arterioſa* from the right ventricle, and *arteria venoſa* from the left.

2 Secondly, *Foreſt. obſ. 4. lib. 6. in ſchol.* hath theſe words. It is to be noted (ſaith he) that if the lungs be wounded in the fleſhy part, wherein there is a remarkable branch of *arteria venalis*, then a man muſt of a neceſſity dye, becauſe he is choaked with bloud: You ſhall know this by the plenty of black frothy bloud.

3. Prognoſtick. Thirdly, that dangerous wounds of the lungs have beene ſometimes cured, read *Plater. lib. 3. obſerv. pag. 690. Horſtius lib. 3. obſerv. Medicar. de morb. pector. obſerv. 11. Valeriol. lib. 4. obſerv. Medic. obſ. 10. Arcæus lib. 2. c. 1. Guilhel. Fabricius obſerv. Chirurg. cent. 3. obſerv. 36. & cent. 1. Epiſtol. epiſt. 52. Matthias Glandorpius in ſpecul. Chirurgico obſerv. 24.* See ſundry in *Sherkius obſerv. Medic. lib. 2. de morb. pulmon.*

Of wounds of the heart. As for wounds of the heart, either the *pericardium* only is wounded, or the ſubſtance of the heart alſo.

Of wounds of the *pericardium*. If the *Pericardium* bee wounded, the wound of it ſelfe is not

not deadly, for it is but a miniſteriall and ignoble part, & hath both few and ſmall veſſels and nerves, and it doth not cleave to the heart, but leaveth ſo much diſtance as giveth way to the pulſation of the heart, and is fit to containe the watriſh humour; yet by accident it may become deadly, if it bee ſo great, that all the watriſh humour floweth out: for this wanting, the hectick fever ſeizeth upon the wounded party; ſeeing it is appointed for the cooling and moyſtning of the heart. See Examples *in Shenkius li. 2. obſerv. Medicar. & Cardan. comment. ad aph. 18. lib. 6. aphor. Hippoc.*

Secondly, if the ſubſtance of the heart be wounded, the wound is to be accounted deadly. See *Hippoc. li. 5. aph. 18. & Galen. in comment. Celſ. lib. 5. c. 26. & Ariſtot. lib. 3. de part. animal. c. 4. Vitus Vidius tom. 2. oper. Medic. lib. 7. de curat. memb. c. 2.* 2 Of wounds in the ſubſtance of the heart.

Firſt, becauſe the heart is the beginning of life, and ſo it being ſpoyled, it can afford no helpe to the reſt of the parts. See *Ariſtot. loc. citato.* Secondly, becauſe it is the laboratory of the vitall ſpirit. Thirdly, becauſe it is the ſhop of the vitall bloud. Fourthly, becauſe it is in continuall motion, which hindereth conſolidation. Fifthly, becauſe it is a hot intrall, and full of bloud, and ſo very ſubject to inflammation. Sixthly, becauſe it hath a ſubſtance compact, hard, and dry, which doth not eaſily admit conſolidation. Seventhly, becauſe copious bloud doth iſſue out into the cavity of the breſt, by the which a man is ſuffocat.

Thirdly, ſuperficiary wounds of the heart do not ſo ſoone kill, as the deed wounds.

Fourthly, wounds in the left ventricle ſooner diſpatch a man, than thoſe in the right.

As for the wounds of the *Diaphragma*; The wounds of the midriffe, but chiefly in the nervous center are deadly, according to *Hippoc. lib. 6. aphor. 18. & Galen. in Comment. & Celſ. lib. 5. cap. 26.* Wounds of the *Diaphragma.*

Firſt, becauſe it is membranous and in continuall motion. Secondly, becauſe the wounds of this part are very painfull, by

by reaſon of the remarkable branches of ſinewes, which it receiveth from the lower *vertebræ* of the neck according to *Gal. lib.* 13. *de uſ. part. c.* 5.

Thirdly, becauſe the *pericardium* is tyed to it; and although the fleſhy circumference wounded may ſeeme to afford ſome hope of recovery; yet wounds in it are not without danger: Firſt, becauſe the principall parts muſt ſuffer alſo; the braine, by reaſon of the nerves, which are inſerted in it; the heart by reaſon of vicinity, and the *arteriæ phrenicæ*; the liver by reaſon of the contiguity, and the *venæ phrenicæ*. Secondly, becauſe the whole midrife is in continuall motion. Thirdly, becauſe breathing is hindered. Fourthly, becauſe blood muſt iſſue out into the capacity of the breſt, which may cauſe ſuffocation. Fifthly, becauſe fearfull ſymptomes enſue, as the pulling up of the heart ſtrings, paine of the *ſpina*, which reacheth to the ſhoulder, difficulty of breathing; for it will be ſlow, great, and with ſighing; a troubleſome cough, a fever, and raving, by reaſon of the affinity which it hath with the heart and braine. See *Celſ. lib.* 5. *cap.* 26. *Fernel. li.* 7. *παθολογ. c.* 8. *Foreſt. obſerv. Chirurg. lib.* 6. *obſerv.* 47.

Now to come to the curation of wounds of the breſt, thoſe which doe not penetrat require no ſpeciall conſideration, but are ſubject to the intentions which have beene delivered for the curation of wounds in generall.

The curation of a penetrating wound of the breſt.

In curing of penetrating wounds, thus you muſt proceed.

Firſt, you muſt lay the patient in his naked bed, his feet being ſtretched out at the length, and the orifice of the wound downward.

1. Intention.

The patient being thus placed, let him lie ſtill untill the Chirurgeon hath made ready ſuch things as are to be applyed to the wound: in the meane time let the wounded party labour to further the diſcharging of the blood, without the veſſels fallen into the cavity of the breſt, by coughing, and holding in his breath.

2. Intention.

When no more blood iſſueth out, then put into the wound

a *flammula*, dipped in the white of an egge, so that the greatest part hang without the wound: for this neither causeth paine, nor letteth in the aire, and is sufficient for the discharging of any hurtfull moysture: Where as a tent may bee swallowed up by the wound, hindereth the flowing of the matter, grieveth the patient, and being continued causeth a *fistula:* whereas the *flammula* may be continued till the fortieth day, the longest time required for ordinary penetrating wounds.

In stead of a *flammula* you may use a silver pipe, such as is used when a *paracentesis* is administred; but it must have a stey on both the sides hollowed, to receive a threed of a reasonable length; lest it bee pulled into the capacity of the brest, in the diastole nature, labouring to shun vacuity: But when the wound doth afford but a small quantity of laudable quittour, it is to bee taken out, and the consolidation of the wound to be procured. The wound and the pipe are to bee anoynted, either with *Arceus* liniment melted in a spoone, or with some artificiall balsame warmed. Above, apply *Diachylon simplex*: While you dresse the wound, it is convenient, chiefly in the winter time, to hold a pan with hot coales above the wound, to hinder the expiration of the naturall heat, and the intermission of the cold aire. *The use of the silver pipe.*

One thing I would have you to observe, that both blood & quittour which is lodged in the capacity of the brest, may be discharged both by coughing, and by urine. If it be discharged by coughing, first the matter is carried into the pleura, then into the substance of the lungs; afterward it is carried to the wind-pipe, and from thence mounting up to the mouth it is spet out. If it bee evacuate by urine, then it passeth first into the substance of the pleura, then into *vena sine pari*, neere to the *diaphragma*, where a branch of it doth passe by a straight course to the emulgents, and so to the kidneis, and bladder. See an exemple of this in *Fabricius ab aq. pendent. part. 2. lib. 2. c. 42.* *An observation.*

One here may move a question, why it is so dangerous a mat- *A doubt.*

matter if matter fall into the capacity of the breſt, and ſo light
Solut. if it fall into the capacity of the abdomen? Three reaſons may be alledged for this.

Firſt, becauſe the matter which falleth into the cavity of the breſt is eaſily inflamed; partly becauſe it is ſtill moved by the parts of the breſt; partly becauſe it is lodged neere to moſt hot parts.

Secondly, becauſe the breſt doth require an ample and free capacity for inſpiration & expiration, to coole and preſerve the naturall heat of the heart.

Thirdly, becauſe it is a hard matter to draw by any paſſage the matter from thence, unleſſe it bee in the depending part, even if you uſe a large and wide ſyringe called by *Galen*, *pyuletus*.

3. Intention. Theſe things being done, if indications of bleeding move you thereto, firſt open a veine in the contrary ſide, and then in the ſame ſide, as the ſtrength of the party, and the ſymptomes ſhall require.

4. Intention. *Arcæus lib. 2. cap. 1.* will have this vulnerary potion miniſtred afterward: ℞ *rhab.* ʒß. *rub. tinct. mummiæ, an.* ℈j. *terræ ſigillat.* ℈ß. *aq. ſcabioſ. bugloſſ. & ſucci granat. an.* ʒj.

5. Intention. After this he adviſeth to prepare a decoction to procure eaſie breathing and eaſe, ſuch is this: ℞ *hord. mundat.* ʒiv. *paſſul. major. exacinat.* ʒiij. *rad. bugloſſ.* ʒiij. *liquir. it. contuſ.* ʒij. *jujub. n.* xx. *pruna n.* xv. *rad. petroſel. contuſ. man.* i. *fiat decoct. in* ℔.xiv. *aq. pluvial. ad conſumpt.* 3. *part. Accommixtetur decoctum cinamo.* ʒiij. *ac colatur In colatura diſſolve penid.* ʒiij. *ſyrup. roſ. ſimpl. & de duabus radicib. ſine aceto an.* ʒij. *ſacchari candi* ʒiv. *Quanta quaque hora capiat ægr hujus decocti* ʒvj. This doth nouriſh, wherefore he is to take no other food for the ſpace of three dayes, unleſſe it bee a priſan, having the emulſion of the great cold ſeeds wherein the roots of fennill and parſly have beene boyled.

Li. 5. Metho. c. 8. If any matter offer it ſelfe to be purged by expectoration, then *Galen* adviſeth to further it by the exhibition of vineger and water warme; for it powerfully diſſolveth clotted blood

If

If the patient doth cough, with difficulty, then miniſter unto him the ſyrup of colts foot, and liquirice, with *Syrupus acetoſus*.

Frambeſ. canon. & conſultat. medicinal. lib. 8. adviſeth morning and evening to miniſter a vulnerary potion, made of the leaves and roots of comfrey, plantane, ſanicle, bugloſſe, boiled in ſpring water and ſome vineger. In the decoction ſtrained ſome *ſaccharum roſatum* is to be diſſolved, and ſome good bole mingled. A vulnerary potion.

Hee willeth alſo that injections be made, of barley water, *mel roſatum* and ſugar; as thus: ℞ *ptyſan.* ℥iv. *ſaccharum rub.* ℥ij. *mellis roſat.* ℥j. *miſce.* In your injections you muſt have a care of two things: Firſt, that no bitter thing be put in them: for this would be unpleaſant to the taſte, and overthrow the appetit. Secondly, that all the injection come out, for if a part of it ſhould be detained, it would putrifie and annoy. It is not amiſſe for foure or five dayes to lay upon the pipe or flammula a ſponge, wet in *aqua vitæ*, and wrung, both to keepe out the aire, and to extract the quittour by it gentle heat. Injections.

Uſe not pledgets of lint, leſt by breathing they be pulled into the cavity of the breſt; from whence would enſue putrefaction, and death at laſt. According to the ſmall quantity of quittour, or great which the wound yeeldeth, dreſſe it once or twice a day. And when the patient breatheth freely, findeth little paine, and no weight towards the midriſe, but ſmall ſtore of quittour, and that laudable, doth flow out of the wound, it is time to ſhut it up. Lint not to bee uſed.

LECT.

LECT. XXIX.

Of the curation of a fiſtula of the breſt following a wound thereof.

IF after you have diligently and carefully uſed the meanes ſet downe by mee, concerning the curation of wounds of the breſt in my former Lecture, for the ſpace of ten daies, you ſee that the wound tendeth not to unition, you may imagin that a *fiſtula* may enſue. That a *fiſtula* will enſue if it be not prevented, you ſhall conjecture by theſe ſignes.

Signes of a *fiſtula.*

Firſt, if that during the aforeſaid time, you have uſed both inward and outward meanes, and yet the wound ſendeth out a greater ſtore of quittour, than it did before, it is a great ſigne, that the wound is growing towards a *fiſtula*, and that the patient is entring into a *pthyſis* or conſumption of the lungs.

Secondly, if the wound ſend forth a thin bloudy quittour, like to water wherein fleſh hath beene waſhed, the ſame is to be feared: for this is a ſigne that much coagulate bloud is lodged within the breſt, which muſt bee turned to quittour, and bee diſcharged partly by expectoration; partly at the wound; which will require a long time, during the which, the wound may become fiſtulate if it be not well looked unto.

Thirdly, if the quittour which iſſueth out of of the ſoare, ſtink vehemently, as the breath alſo, a *fiſtula* may be expected: for this ſheweth that there is great putrefaction in ſome parts, which are contained within the capacity of the breſt, which is not eaſily overcome: firſt, becauſe no bitter medicaments which chiefly reſiſt putrefaction, as aloe, mirrhe, wormewood, the leſſer centory, *carduus benedictus*, &c. are to bee injected, as hath beene ſaid: ſecondly, becauſe wee cannot con-

convenien tly apply topicks to the parts affected: thirdly, because they cannot be kept to the wounded parts, by reason of the motion of the heart, lungs, midrife, and ribs, in inspiration, and expiration: fourthly, because the body is like to fall into a consumption, so that is to be feared, lest a convenient supply cannot be afforded by nature to repaire the solution of unity, which you have taken in hand to cure.

Fourthly, if a watrish substance, although not bloudy, doe still come out at the wound, (doe what you can) you are to feare lest a fistula ensue; for it is to be feared lest some spermatick parts, as membranes or *fibres* are wounded, which admit not unition according to the first intention, or that there is some store of coagulate bloud in the capacity, which will require no short time for suppuration and discharging. When you shall see these signes appeare, then are you to summon your wits, and to goe about the prevention of a fistula. This case hath beene accounted very difficult, yea, desperate in great wounds of the brest, by most Chirurgeons both ancient and moderne. Nevertheless, *Franciscus Arcæus*, arose in our age, a Spanish Physitian, who by his wit and practice found out a way of curing, not only wounds tending to fistulation, but such also as are *de facto* fistulat, and charitably hath consigned it in his Treatise of wounds, *lib.* 2. *cap.* 2.

To compasse this, he useth three intentions: The first is a convenient diet: The second is internall physick: The third is externall application. Indications curative, according to *Arcæus*.

As for the diet, such a one he prescribeth, if the party be strong, for eight dayes and more, according to the toleration of the party wounded, he is to eat nothing but bread and resins: for he affirmeth that his pectorall decoctions doe nourish; from hence untill the thirtieth day he is to eat flesh to dinner, and to rest contented with bread and resins to supper; from the thirtieth to the fortieth day, about which time fistulaes of the brest are for the most part cured, he permitteth flesh both at dinner and supper: If the partie be very weake, he permitteth unto him, even from the beginning of the cu- The dyet.

ration, to eat fleſh both at dinner and ſupper; but it muſt afford a good juyce, and be of eaſie concoction: ſuch is the fleſh of chickens, mountaine birds, kids, lambe, and rabbets. As for the internall phyſick, it is of two ſorts, purging and pectorall.

How the body is to be purged.

For purgation of the body, hee preſcribeth theſe pills: ℞ *pi'ul. aggregativar. & de agarico an.* ʒß, *diacrid. gr.* iij. *fiat maſſula ex qua formentur pilul. v.* He is to ſwallow them about ſix a clock, and about ten a clock to ſup ſome chickin-broth, and to dine about twelve a clock. This is a doſe large enough for the ſtrongeſt perſon: you may detract from it as much as the conſtitution and ſtrength of the party ſhall move you. As for the pectorall medicaments, they are either meerely pectorall, or healing alſo. Out of the deſcription of his medicaments, one may conjecture that either hee was not well verſt in the compoſition of medicaments, or that he was negligent in ſetting downe them.

The pectorall decoction.

Wherefore I am to take ſome paines to ſet them downe according to art: his decoction meerely pectorall, thus you ſhall prepare: ℞ *polypod. quercin.* ʒiiij. *rad. enul.* ʒiij. *hyſſop. expill. vener. recent. an. man.* iiij. *liquirit.* ʒij, *epithymi man.* i. *fol. ſen.* ʒiij. *paſſul. major. exacinat.* ʒiij. *Decoq. iſta in lib.* xxiiij. *aq. font. ad conſumptionem lib.* viij, *ac coletur decoctum: Quod clarificetur addit. ſaccharı rubri in decocto ſoluti, ac mell. deſpumat. an.* ℔. ß. Let the patient drinke halfe a pint warmed in the morning, and ſo much about foure a clock in the afternoone: At dinner let him drinke a pint, and ſo much at ſupper. Let this decoction bee uſed eight dayes, within which time laudable quittour is for the moſt part procured.

The healing decoction.

His healing decoction thus you ſhall make: ℞ *ſcob. guajac.* ℔. ß, *cort. ejuſd.* ʒvi. *ſemin. cummi* ʒi ß, *glycyrrhiz.* ʒij. *paſſul. major. exacinat.* ʒiij. *Decoq. iſta in* ℔. x. *aq. font. ac totidem lib. vini albi ad conſumpt. lib.* viij, *ac coletur decoctum. Sumat eger mane lib.* ß, *ac dormiat: ſumat tantundem hora* iiij*a pomeridiana. In prandio bibat lib.* i. *ac tantundem in cœna.* If the partie be drie, and deſire more drinke, then powre upon the ſimples which remaine

remaine after the firſt decoction, ſix pintes of wine, and ſo much water, and boile away the halfe of the liquor; this will ſerve for quenching of the thirſt: let the wounded party continue the taking of this decoction untill the cure be finiſhed. The roome wherein he lyeth, he will have ſtill to be kept ſhut and warme, and he adviſeth to lie in bed the firſt thirty daies; if the patient cannot endure to lye in bed ſo long, then let him ſit up the warmeſt part of the day, and goe to bed againe betimes: by lying in bed the motion of the parts contained in the breſt is moderated, and the wound is kept warme, which muſt bee obſerved in all penetrating wounds of the breſt.

If the party troubled with any ſuch wound, be in a conſumption or pthyſick, then he preſcribed to him this decoction: ℞ *hord. mundat.* ℥iiii. *paſſul. exacinat.* ℥iiii. *rad. bugloſſ.* ℥iii. *glycyrrh.* ℥ii. *card. benedict. man.* 1. *ſemin. cumin.* ℥ii, *jujubas numero* 20. *pruna numero* xv, *rad. petroſel. man.* 1. *coq. iſta pari modo in lib.* xx. *aq. pluvial. ad conſumpt. lib.* viii. *utatur hoc decocto ut præcedente. Verum poſtquam decoctum eſt aromatizatum cinamom.* ℥ß, *addantur penidior.* ℥iii, *ſyrup. roſ. rub. ſimplic. & de duabus radicibus ſive aceto an.* ℥iii, *ſaccharl. lib.* ß. Now and then, whether the body be coſtive or no, he adviſeth to take a doſe of the pils preſcribed before. Againſt a conſumption.

As for the Topicks, he will only have an emplaſter laid to the ſore, and to be wipted often every day by the patient himſelfe, for the haſting of the curation. This emplaſter hee ſetteth downe: ℞ *ceruſſ. litharg. an.* ℥iiii, *ol. oliv. antiq. aceti fortiſſ. an. lib.* 1. *coq. omnia igne lento ad emplaſtri conſiſtentiam.* Theſe methodicall proceedings of *Arcæus*, are not only effectuall in preventing a fiſtula, but in curing of it alſo, if it bee preſent. He deſerveth thankfull commemoration of poſteritie for the ſupplying of this defect, which often for want of art and meanes did fall out in the curation of dangerous penetrative wounds of the breſt. The topicks.

Sennert. part. 2. *lib.* 2. *c.* 18. holdeth, theſe fiſtulations to be of hard curation, and that not without cauſe: For firſt, the parts *Sennertus* his method.

parts of the breſt, as the muſcles, ribs, lungs and heart, are in continuall motion. Secondly, becauſe the quittour cannot be promptly diſcharged. Thirdly, becauſe much quittour is gathered: And they are more hardly cured, if the orifice lye upward, and not in the depending part: Two meanes hee appointeth for the curation of theſe; and becauſe they are very rationall, they are not to be paſſed over in ſilence.

His injection. The injection is this: ℞ *flor. roſ. rub. ſummitat. hyper. equiſeti, cariophyllat. rad. ireos an.* ℥i. *veron. valerian. milleful. piloſel. eupat. ſigil. Salomon. an. man.* 1. He adviſeth to adde to theſe the leſſer centory, the root of *ariſtol.* and gentian, as alſo myrrhe and frankincenſe; but ſeeing the myrrhe and frankincenſe muſt be uſed in powder, and it is not fit to uſe any powders in the injections which are appointed for the breſt, becauſe the internall parts are very tender; and becauſe they, and the leſſer centory are bitter, which by reaſon of their bitterneſſe may offend the taſte, they are to be left out of the injection. After a nights infuſion, then you ſhall boile the ſimples, ſet downe by me, in a gallon of faire ſpring or raine water to the halfe, that is, untill a pottle remaine: you ſhall firſt clarifie every ℔. of this decoction with two ounces of honey, and ſo much ſuger, adding the white of an egge beat to water: Laſt of all, having ſtrained it, you ſhall reſerve it in a glaſſe veſſell to your uſe.

His vulnerary potion. As for his vulnerary potion, he will have it made of theſe ſimples; Plantane, Agrimonie, Fluellin, Scabious, *Hypericum*, Betony, Lung-woort, ground Ivie, Harts-tongue, Sage, Avens; you may adde the white Hoarehound, Sanicle, and our Ladies mantle. Of theſe you may frame unto your ſelves ſuch a decoction: ℞ *Eupat. ſcabioſ. cariophyllat. ſanicul. plantag. pulmonar. ling. cervin. Alchimill. tuſſilag. an. man.* 1. *rad. conſol. major. & borrag. an.* ℥i, *coq. iſta in lib.* x. *aq. font. aut pluvial. ad mediet. conſumptionem, ac coletur decoctum. Poſtea addit. ſaccha. ac mell. an.* ℥iiii, & 2. *albuminib. ovorum clarificetur decoctum atque iterum coletur. Capiat æger ſingulis diebus hora* 5ª *matutina lib.* ß, *calid. ac dormiat: capiat tantundem hora* 4ª *pomeridiana.*

If

If you well consider the faculties of the simples, which enter into the injection, and the vulnerary potion, you must confesse, that it must be a very obstinate griefe which refuseth to be cured, if these meanes be methodically used, and the sore be dressed according to art.

All Authors, almost, who have discoursed of wounds of the *Thorax*, have made mention only of wounds received in the forepart of it; but have made no mention of wounds inflicted into the backe, which pierce also into the cavitie or hollownesse of it: whereas these are most dangerous, by reason of the *spinalis medulla*, which is placed there, and the multitude of sinewes which proceed from thence. If such an event doe fall out, first you are to dresse the wound in the backe, as I have set downe in the six and twentieth Lecture. As for the wound of the brest, it is to bee cured by injections, and vulnerary potions set downe by me in the six and twentieth Lecture.

Of penetrating wounds received in the backe.

LECT. XXIX.

Of the wounds of the abdomen, *or lower belly, which penetrate, and yet without any hurt of the parts contained.*

THese wounds either pierce to the cavity thorow the muscles and the *peritonæum*, or else they doe not penetrate. If they pierce, then either some part starteth out of the wound, or else none doth. The parts which start out are either the caule or the guts: if no part start out, then either some part contained is wounded, or none at all.

The differences of wounds of the belly.

You shall conjecture a wound to penetrate: First, if the probe or a wax candle goe deepe in straight wayes: In searching you must first see that the wound be not inflicted obliquely:

The signes of a wound penetrating.

liquely: for in this case you may thrust the probe a great way betweene the muscles, the wound notwithstanding not penetrating. Secondly, you must diligently search, that the passage of the wound bee not stopped with any of the superjacent bodies, as the fat, the *membrana carnosa*, or the muscles.

2 Secondly, if injection be made with wine warmed; if the wound penetrate, the wine will be received within the cavitie; but if it pierce not, it will returne.

3 Thirdly, we may conjecture by the figure of the weapon, whether it penetrate or no: for if it grow broader from a rush point, and the wound bee broad in the outer part, it is likely that the wound is penetrating.

4 Fourthly, if the caule, or one of the intestins start out of the wound, then no doubt is to be made of the penetration of the weapon.

1 As for the presages receive these: First, a wound of the belly, not penetrating, is void of danger, unlesse it be extraordinarily large; for in such a wound many parts must suffer solution of the unitie, the paine must be great, many spirits must bee dissipated, and the party must bee more subject to fainting.

2 Secondly, a wound received in the middle part of the belly, is more dangerous than that which is received in the sides: First, because in the middle it is more tendinous, and so the more sensible and subject to inflammation and paine: Secondly, because the intestines rowle towards the middle part.

3 Thirdly, all penetrating wounds are to be accounted dangerous: First, because they are most commonly large, but alwayes deepe. Secondly, because the aire hurteth the guts. Thirdly, because quittour falleth into the capacitie.

4 Fourthly, when in a wound of the belly, any of the remarkable parts contained, are wounded, it is to bee accounted a deadly wound most commonly. Of such wounds *Celsus* thus pronounceth: He cannot escape who is wounded in the basis of the braine, in the stomack, in the gates of the liver,

and

and to whom the middle of the lungs, the *jejunum*, the ſmall gut, the kidneyes, or bladder are wounded.

The curation of theſe wounds.

As for the curation of ſuch wounds: firſt, a wound not penetrating is cured without any difficulty, as wounds in other fleſhy parts of the body.

The intentions of curing of a wound, wherein ſome part ſtarteth out.

Secondly, if the wound be penetrating and any part contained ſtart out, foure intentions are reqnired. The firſt is, that the part be ſituate in its owne place. The ſecond is, that the wound be ſtitched: The third is, apply convenient medicaments. Fourthly, that a courſe be taken for the removing of ill ſymptomes.

What is to be done if a gut ſtart out.

If the gut ſtart out, and you be preſently called to it, then you are to thruſt it in with hands and fingers. But if it hath long hung out, & by reaſon of the cold ayre be filled with flatuoſitie, and ſwelled ſo that it cannot be reduced; firſt of all you are to uſe an incarminative fomentation to diſcuſſe the flatuoſitie, and then to try the repoſition of it. The fomentation muſt be made of camomil, melilot, dil, penny royall, germander, tanſey, lavender, wormwood, mynts, bay-berries, cumminſeeds, fennill-ſeeds and aniſe-ſeeds, boyled in red aſtringent wine, or milk, if ſuch a chance fall out in the countrey. If after ſufficient fomentation you cannot put in the gut, then you are to dilate the inciſion.

What is to be done if the caule come out.

If the caule come out, and by reaſon of the cold aire it be much cooled, which you ſhall diſcerne by the unnaturall hardneſſe of it, or if it be black or of a livid colour, then it is to bee bound up neere to the warme and ſound part, and the corrupt part muſt be cut away. Let the threed hang out at the wound, untill the corrupt part ſeparate from the whole. Then draw the threed wholly out of the wound. If the caule be nothing altered, it will be ſufficient to thruſt it within the *Peritoneum* without binding. It is requiſit that wee uſe deligation, when wee cut away any portion of the caule: otherwiſe much bloud would fall into the capacitie of the abdomen: for the caule ſeemeth to be a texture of veines and arteries enterlaced with fat.

How wounds of the belly are to be ſtitched.

The ſecond ſcope is to ſtitch the wound. This kind of ſtitch is called γαστροραφία. Before you ſtitch you muſt performe theſe three things. Firſt, you muſt have a cleare light, that you may have a perfect view of the wound: Secondly, you muſt lay the patient upon the ſide oppoſit to the wound, that the guts trouble you not while you are a ſtitching: Thirdly, that you have your ſervant by you, to hold up the parts which you are to ſtitch.

Gaſtroraphia.

The differences of it.

Theſe things being provided goe about your buſineſſe: of this kind of ſtitch there be three uſuall ſorts.

1 The firſt is thus performed: firſt, the needle is thruſt thorow the skin and the muſcles, even to the *peritoneum*, not touching the *peritoneum* of that ſide: Then from within outwards the needle is to be thruſt thorow the *peritoneum* and muſcles of the oppoſit ſide. Then within the diſtance of an inch, the needle is to be thruſt thorow the muſcles of the ſame ſide, leaving the *peritoneum*. Afterwards from within outwards the needle is to be thruſt thorow the *peritoneum* and the muſcles. So you are to proceed untill ſometimes piercing the *peritoneum*, and ſometimes ſparing it you have ſufficiently united the parts disjoyned. Some, of foure ſtitches make one ligature, cutting the threed and tying the ends of it firmly together, and uſe as many ligatures as are ſufficient.

2 The ſecond is done by ſtitching the muſcles together, and the ſides of the *peritoneum* together. In this ſort of ſtitch, firſt the needle is to be paſſed thorow the skin and the muſcles to the *peritoneum*: Then the oppoſit ſide of the *peritoneum* is to be joyned to the ſide lying under the muſcles pierced: this being done, the oppoſit muſcles are to be pierced. This courſe is to be followed untill all the brims of the wound be decently united.

3 The third differeth not from the ſtitch which is uſed in other parts of the body: For the needle is to bee thruſt thorow two ſides of the muſcles, and ſo many of the *peritoneum* ſtill untill ſufficient ſtitches be taken. The firſt is accounted the beſt. After ſtitching you leave an orifice in the

the depending part to admit a tent, that the matter procured by ſuppuration may be diſcharged. This kind of ſtitch is uſed, becauſe the *peritoneum* being a membrane would not admit conſolidation without the entercourſe of fleſh. And if it were left unconſolidat, an uncurable tumor would be left in the outer parts, the guts inſinuating themſelves into the cavities of the muſcles.

One thing is to be obſerved, that you ſecond and ſtrengthen this kind of ſtitch, by a dry ſtitch, and that very firme: for within a few dayes the threed will cut aſunder the brims ſtitched, and the ſtitches will become looſe, becauſe the inteſtines continually doe but upon the abdomen, wherefore the dry ſtitch is requiſit, as it is in the curation of the double hare-lip. The uſe of the dry ſtitch.

The third intention was ſaid to be the application of convenient topicks. Such are all choice vulnerarie balſames, whereof I have ſpoken ſufficiently before, and agglutinative emplaſters; ſuch are *diapalma* and *emplaſtrum de minio* newly made, and not too dry in the Summer ſeaſon. In the Winter *emplaſtrum ſtictícum* is the beſt. The third intention.

The deſcription of it is thus ſet down by *Crotius*: ℞ *ol. lini & olivar. an. li. 1. ol. laurin. lib. ß. litharg. auri & argent. an. lib. ß. minii. ℥iiij. coq. iſta ad emplaſtri conſiſtentiam, tum adde ceræ, colophon. an. lib. 1. Iſtis liquefact. injice gumm. ſequentia in aceto ſoluta, atque ad juſtam conſiſtentiam iterum reducta. opopan. ℥ii. galban. ſerapin. elemni anemon. bdell. an. ℥iij. Iſtis incorporat. injice ſequentia in alcohol redacta. calaminar. ℥iiii. ariſtol. long. & rotund. carab. magnet. lap. hematit. coral. rub. & albor. vitriol. albi, terræ ſigillat. croci Mart. ceruſſ. antimon. an. ℥i. olibán. mirrh. aloes hepat. mummiæ, ſanguinis draccn. an. ℥ß. Iſtis probè commiſtis adde terebinthinæ ℥ij. vernicis ℥i. caphur. ℥iii. paretur emplaſtrum ex quo formentur magdaleones manibus ol. hypericon. inunctis.* I have altered the doſes of the ſimples, I confeſſe, art ſo requiring, and have ſet downe the artificiall compoſition. The faculties of it you may read in himſelfe; for they belong not to the ſubject which wee have in hand. *Fabrici-* The deſcription of *emplaſtrum ſtictícum* or *ſodicationis*.

us ab. aq. pendent. chirurg. part. 2. lib. 2. c. 45. adviſeth us to uſe aſtringent powders, as this: ℞ *ſang. draeon. bol. Armen. maſtiches, baccar. myrti an. fiat ex omnibus pulvis.* If *ſarcocol*, the root of comfrey and borax were added, the medicament would be the more effectuall. The laſt intention of curing of theſe wounds penetrating wherein no contained part is wounded, was ſaid to be the ſhunning and hindering of evill ſymptomes. Now theſe ſymptomes are two: The paine of the parts adjacent being continuall, and the collection of quittour or bloud in the hollowneſſe of the abdomen.

How paine is eaſed,

To avoid the firſt, *Galen. 6. method. c. 4.* adviſeth us to embrocate all the parts from the arme-pits to the groynes with Sallet oyle warmed: But it were better to embrocate thoſe parts with the oyle of camomil, roſes, and white lilies if they be to be had: for ſo the inflammation would be prevented, paine would be eaſed, and the parts kept ſoft and plyable.

How quittour or bloud collected in the cavitie of the belly is diſcuſſed.

As for the ſecond accident, bloud and quittour may fall from the brims of the wound into the hollowneſſe of the belly, and may offend not the guts only, but all other parts contained alſo: for ſometimes a tumour is cauſed, and ſometimes the dropſie is procured. You ſhall know that theſe things are contained in the hollowneſſe, firſt by the weight which is felt there, the paine, the tenſion of the part: Secondly, if you cruſh the belly, you ſhall perceive the matter to ſhift from place to place under your hands. Seeing this matter cannot be ſenſibly emptied: becauſe the wounds of the belly muſt not be kept open, for the reaſon ſet downe before when I ſpake of the ſtitching of theſe wounds, wee muſt labour inſenſibly to diſſipate it by medicaments, which rarifie the parts, diſſipate and draw out the matter. Wherefore you may embrocate the groynes with the oyle of rue, dill, *euphorbium*, wax, *caſtoreum*, of tyles. Then you may apply *diachylum magnum cum gummis* ſoftned with the oyle of *ſcorpions*, or *oxycroceum*, and *de mucilaginibus* mixed together.

LECT.

Lect. XXX.

Of penetrating wounds of the belly wherein ſome of the parts contained are wounded, and firſt of the wounds of the parts appointed for chylification.

The differences of the parts wounded.

NOw the contained parts which are wounded, are either appointed for nutrition or procreation. If for nutrition, then they either procure chylification or ſanguification. Thoſe which procure chylification are the ſtomack, and the guts. The ſtomack hath two parts, the orifice, which is called *Oeſophagus*, and the bottome which is called *Ventriculus*.

Differences of the wounds of the *Oeſophagus*.

If the *Oeſophagus* be wounded, then the wounds are either ſuperficiarie and ſmall, or elſe deepe and paſſing to the cavity of it: And both theſe are either ſtraight, or tranſverſe, and theſe either neere to the ſtomack, or ſomewhat remote from it.

The prognoſticks.

Wounds ſmall, ſtraight, and which are ſomewhat remote from the bottome of the ſtomack, are leſſe dangerous; But thoſe which are great, tranſverſe, and neere to the bottom, are deadly, and admit no conſolidation. See *Guido tract.* 3. *doct.* 1. *c.* 1. for this theſe reaſons may bee given.

The reaſons of this.

First, becauſe the paſſing of the meat and drink doth hinder conſolidation. Secondly, becauſe it is continually bedewed with moyſture deſcending ſtill, either from the head or from the almonds. Thirdly, becauſe its office is abſolutely neceſſary for the preſervation of life, that is, the carying of the meat and drink to the bottom of the ſtomack. This carying of the aliment is performed by impulſion and attraction. The externall

nall membrane, which is fleſhy, and hath tranſverſe fibres, doth thruſt it downe; but the internall membrane, which hath ſtraight fibres, doth attract the nouriſhment. Wherefore the fibres of both the membranes being cut aſunder, the paſſing of the nouriſhment is ſtayed, and ſo the party defrauded of alimenr. Fourthly, becauſe the meat and drink muſt bee diſcharged by vomiting, ſeeing it cannot paſſe to the bottom of the ſtomack. Fifthly, when the upper nervous part of *guls* is wounded, which is nervous and of exquiſit ſenſe, which the *Græcians* cal καῦδα, death doth moſt commonly ſuddenly enſue.

The ſignes, *Celſus lib. 5. cap. 26.* hath theſe ſignes of it wounded: *Ubi ſtomachus autem percuſſus eſt, &c.* But when the ſtomack is wounded, the hicket and vomiting of choler doth enſue. If meat or drink be taken, it commeth up againe ſpeedily, the pulſe groweth weake, thin ſweats break out, and ſo the extremities of the body grow cold. *Fernel. lib. 7. pathol. cap. 8.* addeth fainting. Although I have ſet downe the methodicall curing of ſuch a wound, Lect. 27. yet I thought good here to touch a few things neceſſary to be knowne. And indeed *Nunquam ſatis dicitur, quod nunquam ſatis diſcitur.*

Why the wounds of the orifice are more dangerous than thoſe of the bottom. Wounds in the *Oeſophagus* are more dangerous than thoſe of the *Ventriculus*, for theſe reaſons: Firſt, becauſe it is of a nervous and membranous ſubſtance, and ſo is not eaſily united. Secondly, becauſe the paine is exceeding ſharp, and ſo depriveth one of reſt and ſleep. Thirdly, becauſe it hath a great conſent with the braine, by reaſon of the nerves deſcending from the ſixth conjugation which are beſtowed upon it. Fourthly, becauſe topicks cannot conveniently bee applyed to ſuch a wound, yea if you miniſter vulnerary potions, either they returne by vomiting, or ſlipping downe make no ſtay, or elſe they iſſue out at the wound. Fifthly, appetit is loſt, and ſo the deſire of meat and drink, without the which the life of man cannot long continue. Sixthly, becauſe convulſions may enſue, which are deadly, according to *Hippoc. aphor. ſect. 5. 2.* Seventhly, becauſe vomiting of choler

choler doth ensue, according to *Celsus loco citato*, which may enlarge and teare the wound.

Now as concerning the wounds of the bottom of the stomack, they have the same differences which those of the orifice have, which after the prognosticks, and manner of curing of these wounds, receive these presages. The differences of the wounds of the *ventriculus*. Presages.

1

First, small and superficiall wounds are easily cured; but penetrating wounds are accounted deadly by *Hippocrat. aphor. 18. Sect. 6. & Celsus li. 6. c. 26.*

Now this word Deadly hath a threefold signification; for first it signifieth that bringeth inevitable death; secondly it signifieth that which most commonly bringeth death; thirdly it signifieth that which is dangerous, and may bring. Now wounds in the bottom of the stomack penetrating, are not alwaies deadly in the first signification, although they be in the second and third signification. Deadly what.

Secondly, penetrating wounds in the bottome of the stomack are hard to be united: First, because it is of a membranous substance. Secondly, because meat and drink keep asunder the brims of the wound: Thirdly, because the vulnerarie potions slip out at the wound: Fourthly, because a convenient ligature to keep the brims of the wound together cannot be applyed: Fifthly, because the stomack is very sensible, from whence ensue paine, afflux of humours, watching and inflammations: Sixthly, because the body cannot be without the benefit which it affordeth to it, for in is the pot wherein the nourishment of the whole body is boyled. Why wounds of the *ventriculus* are hardly cured.

2

The second presage: penetrating wounds in the *Ventriculus* are not so dangerous as those of this kind in the *Oesophagus*. First, because the bottome is more fleshy. Secondly, because vulnerary potions and other medicaments may longer stay here. Thirdly, because the dignity of this is not so great, for the orifice is the seat of the appetite. Fourthly, because the bottome is not of such an exquisit sense as the orifice. That wounds in the bottome of the stomack may bee cured, read *Crollius in præfat. Basil. Chymic. Shenkius*, and others. Why these wounds are not so dangerous as the former.

thers. It were too tedious to set downe their narrations.

Signes of the ventriculus wounded.

You shall know that the bottome of the stomack is wounded, first, if the wound be under the *diaphragma*, or the *mucronata cartilago*: secondly, if the *Chylus* come out at the wound either sincere, or mingled with the meat unaltered.

The curation of these wounds.

As for the curation of these wounds, you must not suffer the tent to enter into the wound of the stomack: it must only keepe open the parts lying above the stomack. Let it bee armed with a digestive made of the oyle of *Hypericum*, turpentine, and the yolk of an egge; for this asswageth paine, procureth quittour, and is glutinative. The stomack outwardly is to be embrocated with the oyle of mints, myrtils, quinces, wormwood, and the oyle of roses; let him drink the juyce of pomegranats and quinces, or the syrups of them in a decoction of horse-taile, mouse-eare, and pervincle or plantain-water sugered. To poore people you may prescribe posset drink, wherein these herbes have beene boyled: Let the party drink and eat very sparingly, for the wound will better unite when the stomack is somewhat empty and wrinkled together.

The curation of wounds of the guts.

If the guts be wounded, then they are either the small or great guts. If the small be wounded, the *chylus* commeth out at the wound, the flankes swell and become hard, the hicket troubleth the patient; hee vomiteth choler; hee hath great gripings in his belly; oftentimes a cold sweat breaketh out, and the extreme parts grow cold.

The differences and signes.

The presages.

If the great guts be wounded, the excrements come out at the wound. Now the wounds of the guts are either superficiary, or they passe to the cavity. If they passe to the cavity, then they are either straight or transverse, and these either great or small.

This being noted, you may thus conjecture of the event. First, if the wound be but superficiary, yet it is not altogether without danger, because all the externall parts of the abdomen are divided. Secondly, great wounds of the guts, but chiefly

chiefly if they be tranſverſe, for the moſt part prove deadly.

Firſt, becauſe they are of a membranous ſubſtance, which hath but little bloud. Secondly, becauſe the *Chylus* and excrements doe continually paſſe by them. Thirdly, becauſe locall medicaments cannot conveniently be applyed to them, partly becauſe they lye deep in the body, partly becauſe they continually change place. Fourthly, becauſe the brims are kept aſunder, they being diſtended by flatuoſity, the *Chylus* and the excrements. Fifthly, becauſe their office is abſolutely neceſſary for the preſervation of the life of man; for either they diſtribute the *chylus*, which is performed by the ſmall guts, or elſe they containe and diſcharge the excrements, which the great doe. But theſe are hindered the guts being wounded. Sixthly, becauſe they are very ſenſible, and ſo paine, inflammations, fevers, and watching may enſue.

The third preſage: wounds of the ſmall guts are more dangerous than thoſe of the great. Firſt, becauſe they are more ſinewy and membranous than the great. Secondly, becauſe they are of a more exquiſit ſenſe. Thirdly, becauſe they are neerer to the ſtomack. Fourthly, becauſe they have more meſaraicall veines. Fifthly, by reaſon of their excellent office; for they diſtribute the *chylus*, and more refine it, according to *Galen. 4. de inſ. part. c. 17.*

The fourth preſage: amongſt theſe the wound of the *Jejunum*. Firſt, becauſe it hath more meſaraicall veines than the reſt, which maketh it looke red. Secondly, becauſe it may bee ſoone inflamed, by reaſon of the plenty of blood. Thirdly, becauſe it is next to the liver, and ſo ſooneſt inflamed. Fourthly, becauſe it hath a tenderer ſubſtance than the reſt. Fifthly, becauſe it receiveth immediatly and in full force the ſharp choler from the gall: whereas the reſt receive it but mediatly, and the ſharpneſſe of it being much abated.

Why the wound of the *jejunum* is ſo dangerous.

The fifth preſage: The great guts are more apt to receive conſolidation, than the ſmall; partly becauſe they are of a more fleſhy ſubſtance, partly becauſe they are not

Why wounds in the great guts are more eaſily cured.

so sensible: And thirdly, the excrements contained in them are solider than the *chylus*, and so not so apt to flow to the wounded part, and so to keep the brims asunder.

The intentions of curing these wounds

As for the curation of these wounds, they require foure intentions: The first is, to stitch the brims of the wound with the glovers stitch; if the gut be not without the wound,

1 it must bee drawne out gently: Let it be sowed with good flaxen threed not waxed; for then it will swell and not so soone cut the brims of the wound asunder.

2 Secondly, to reduce the gut to its owne place, but it must first be fomented with red astringent wine warmed: secondly, agglutinatorie medicament is to be applyed to the wound, such is this: ℞ *Mastich. sarcocoll. an.* ℥j. *borac. & mirrh. an.* ℥ β. *fiat s. a. pulvis, qui aspergatur.*

3 Thirdly, the externall parts of the belly are to be stitched, as I have taught in my former Lecture. Better it is to stitch these parts, than to leave them open. First, because you cannot any more apply any locall medicament to the wound, for the guts still shift. Secondly, because the aire will cause paine and griping. Thirdly, because the cold aire may breed flatuosity, which distending the guts, may breake the stitches. Fourthly, because the naturall heat being kept in, the gut is sooner consolidat.

4 The fourth intention is, you must have a care that the excrements hurt not the wound, they becomming hard by staying. To this purpose you must feed the patient with moistning meats, and minister emollient clysters, made of the decoction of a sheeps head and feet. In curing of these wounds you must not omit the ministring of vulnerary potions.

LECT.

LECT. XXXI.

Of wounds of the parts appointed for ſanguification and procreation.

OF all the parts appointed for ſanguification, the liver is the chiefeſt and principall, being the prince of the lower region of the little world; firſt then I will ſpeake of the wounds which may happen to it.

Wounds of the liver, they are either ſuperficiary lightly hurting the outer part, or they are deepe and great, piercing even to the trunks of the *Vena porta*, and the *Vena cava*. *Celſus lib.* 5. *cap.* 26. ſetteth downe theſe ſignes. The differences.

Theſe are the ſignes of the liver wounded, a great flux of bloud in the right ſide, the ſides all drawn towards the *ſpina*: the party delighteth to ly upon the belly; prickings and paine ven to the neck, and to the ſide joyned to it: The ſhoulder-blade ſtretched, ſometimes vomiting of choler doth alſo happen. The ſignes.

Peccetius lib. 2. *cap.* 8. *Oper. Chirurgic.* addeth, after meat they feele a heavineſſe in the ſide, they are unquiet, they have a ſharp fever, ſometimes they piſſe a bloudy urine: After ſome dayes alſo they diſcharge by the ſiege rotten bloud, the face becommeth diſcoloured and wan.

What will befall, the liver being wounded, theſe aphoriſmes following will ſhew you. Firſt, ſuperficiary wounds of the liver may admit curation: but great and deep wounds will not. *Hippoc. aph.* 18. *lib.* 6. hath theſe words: If the bladder, or the braine, or the heart, or the midrife, or a ſmall gut, or the ſtomack, or the liver bee wounded, it is deadly. The prognoſticks. 1 Why deepe wounds of the liver are deadly.

Sundry reaſons may bee alleaged for this. Firſt, is the great

great flux of bloud which followeth. Secondly, the dignity and neceſſity of it: for it is a principall part, and affordeth bloud for the nutrition of the whole body. Thirdly, the inflammation which poſſeſſeth it being wounded; for it is a member hot and full of bloud. The fourth is the difficulty of curation: for vulnerary potions leeſe much of their ſtrength before they come to the liver. The Topicks cannot well bee applyed it lying deepe, and the quittour cannot bee well diſcharged, and ſo it may corrupt the ſubſtance of the liver, and ſo ſanguification is hindered, from whence enſue the conſumption of the body, or the dropſie.

Obiect. If you obiect that good Authors have in their monuments ſet downe the examples of ſome who have beene cured, who have received a deep wound in the liver;

Anſw. I anſwer that thoſe examples are rare, and come neere to miracles, God his providence concurring with the extraordinary ſtrong conſtitution of the body: wherefore let not theſe draw from you any bountifull promiſe of recovery.

2 The ſecond preſage: If cold ſweats burſt out of the forehead and neck, if the wounded party often faint, if the extremities grow cold, and the party become very weake, then death attendeth.

The curation. Touching the curation, let it be dreſſed with aſtringent trochiſces diſſolved in plantaine water, adding thereto the ſyrups of dry roſes, myrtils and pomgranats: for a doubtfull hope is better than a reſolved deſpaire.

Wounds of the ſpleen. The ſecond part appointed for ſanguification which may be wounded is the ſpleen: for according to *Ariſtot. lib. 3. de part. animalium*, it is a baſtard liver. The wounds of it as of the liver are either ſuperficiarie or deepe. Signes of ſpleen wounded deeply are theſe according to *Celſus li. 5. c. 26.* Black bloud doth iſſue out of the left ſide, the ſide it ſelfe and the ſtomack become hard, great thirſt enſueth, and the paine reacheth to the neck.

The differences and ſignes.

Concerning theſe wounds, receive theſe prognoſticks:

Firſt,

First, deepe wounds of the ſpleen are for the moſt part deadly. *Celſus li.5. c.26.* affirmeth, that they who are ſo wounded hardly are ever cured: for this prognoſtick theſe reaſons may be given: First, becauſe a fearfull flux not onely of the venall, but of the arteriall bloud alſo doth enſue. Secondly, it is a worthy and neceſſarie part, it furthering ſanguification, and being a ſecond liver, if it performe not its duty. The prognoſticks.

Thirdly, becauſe it being a part full of blood and hot, it may be eaſily inflamed. Fourthly, becauſe it hath a great conſent with the heart, by reaſon of the multitude of the arteries communicate with it: for noyſome vapours may be ſent to the heart, from the quittour and putrified bloud.

The ſecond preſage: Although deepe wounds of the ſpleen be deadly, yet I am of the opinion that the ſpleen may be cut out of a man, or a woman, and live. The experiment of this exſection in a dogge, Maſter *Gillam* and I made in Doctor *Benhams* houſe. First, inciſion was made in the left ſide, hard under the ſhort ribbes, foure inches in length through all the containing parts of the abdomen: Then the ſpleen was drawne out: Thirdly, all the veſſels by the which it was bound to the adjacent and contiguous parts we bound to prevent the immoderate flux of bloud: Fourthly, wee cut away the ſpleen neere to the ſubſtance of it: Fifthly, wee ſtitched the partsof the abdomen, and left the healing of the parts to nature; all the wounded parts were in a ſhort time healed. But about ſix weekes afterward the curre became mangie, the ſpleen belike not drawing unto it ſelfe the feculent blood. *Vitus Vidius de curat. memb. li.10. c.* 10. thinketh this operation to be impoſſible with keeping of life, by reaſon of the immoderate flux of bloud which muſt enſue. But the binding of the veſſels doth remove this ſcruple, which I wonder he did not conſider. That the ſpleen may be cut out and yet life remaine.

The third preſage: By reaſon of the ſpleen wounded the ſtomack, liver, and the whole body may become il affected: ſo that the dropſie, ſcabbineſſe, melancholy, and ſuch diſeaſes may enſue.

The

The curation. The wounds of the ſpleen are cured as thoſe of the liver: It falleth out in wounds of the liver and ſpleen, that much blood falleth into the cavitie of the abdomen. But this bloud is either diſcuſſed by the naturall heat, or elſe it cauſeth an apoſteme in the groyne.

Wounds of the kidnies. The differences. The third part apointed for ſanguification is the kidney: This may be wounded either ſuperficially, or deeply; and ſo either where the *caruncul æ papillares* only are, or to the *pelvis* alſo, and this laſt either without any hurt done unto the veine and arterie emulgent, or they being wounded alſo.

Signes. If the kidneyes be wounded to the *pelvis*, clots of bloud will come with the urine: there will be a great paine in the part affected, and will reach to the groyne and teſticle. See *Celſus lib. 5. c. 26. Fernel. lib. 7. Patholog. c. 8.*

Prognoſticks. 1 If the kidney be wounded through the back, then it is not like that the party can eſcape: for the wound muſt pierce the *Pſoas*, and the nerves ſpringing there from the *ſpinalis medulla* can hardly be free.

2 If the wound be inflicted by the ſide and pierce but only to the *caruncul æ papillares*, it may be cured, and yet not without difficulty, becauſe the muſcles of the belly muſt bee wounded, and the *peritoneum* alſo betweene the membranes of which it is lapped.

3 If the wound pierce to the *pelvis*, the wound moſt commonly falleth out to be deadly: Firſt, becauſe the draining of the ſeroſitie from the veines and arteries is abſolutely neceſſarie: otherwiſe if it be ſtayed in the body, it would hinder the unition of the wound, and procure watriſh powkes and the dropſie. Secondly, becauſe the ſubſtance of it hardly doth admit conſolidation, partly by reaſon of the compactneſſe of its ſubſtance, partly becauſe it hath within it ſelfe the *caruncul æ papillares* and the *pelvis* which are ſpermatick parts.

4 If the veine and arterie emulgent be wounded, there is ſmall hope of recoverie, becauſe a fearfull flux of bloud muſt enſue.

The curation. The curation is performed by ſanative injections, vulnerary

nerary potions, and the miniſtring of the *trochiſci de alkekengi cum opio*, or if the paine be not great, *ſine opio* in new milke, having *ſaccharum roſatum* diſſolved in it.

The fourth part appointed for ſanguification, which may be wounded, is the bladder. It may bee wounded firſt in the neck, where the ſphyncter muſcle is, which is fleſhie: ſecondly, in the body of the bladder. If the wound be in the body of the bladder, then it happeneth either in the ſides about the groines, where the ligaments of it are, or in the other membranous parts. Wounds of the bladder. Their differences.

The ſignes of the bladder wounded are theſe, according to *Celſus*, *lib.* 5. *cap.* 26. and *Fernel. lib.* 7. *pathol. c.* 8. The urine commeth bloudy and ſparingly: if the body of the bladder be wounded, then the urine falling into the cavity of the *abdomen*, it will ſeeme to be *aſcites*, and the paine will be communicate to the groines and ſtones in men. The ſignes.

As for the prognoſticks, receive theſe: Firſt, wounds in the necke of the bladder, where it is fleſhie, are curable. This needeth no confirmation, for we may ſee frequent experiment of this in thoſe who are cut for the ſtone. Secondly, wounds in the laterall parts about the groine are curable alſo in thoſe who are young, and of a good conſtitution of body. Thirdly, wounds in other parts of the body of the bladder, which are membranous, are uncurable. See *Hippoc. aphor.* 18. *ſect.* 6. and *Galen* in his Commentary upon this place: He yeeldeth this reaſon, becauſe the bladder is nervous, thin, and hath but little bloud. Of this ſame opinion is *Ariſtot. lib.* 3. *hiſtor. Animal. cap.* 15. who ſaith, that the bladder being cut cannot unite, unleſſe it be in the beginning of the necke. Preſages. 1

Celſ. lib. 5. *c.* 26. ſubſcribeth to theſe, affirming, that they hardly can be healed whoſe bladder is wounded: for the confirmation of this opinion, theſe reaſons may be yeelded: firſt, becauſe it is membranous: ſecondly, becauſe the wounds of it are very painfull, whence affluxion of humors and an inflammation doe proceed: thirdly, becauſe it eaſily mortifieth: fourthly, becauſe it being the chamber-pot of the bo- Why wounds of the bladder are incurable.

die, the urine contained in it will not ſuffer the wound to conſolidate, by reaſon of its acrimony nipping, by reaſon of the quantity diſtending, and by reaſon of its humiditie relaxing. Fifthly, becauſe fearfull ſymptomes enſue after ſuch wounds, as fevers, watching, the hicket, dejection of appetite, convulſions and fainting. Sixthly, if in wounds of the bladder a fever continue, if the wound become black, or of a livid colour; if the party cannot ſleepe, or if it doe continually ſlumber, and if a convulſion doe happen, and the partie become weaker and weaker, you may prognoſticate that the party will die.

The curation. When you goe about to cure wounds of the bladder, miniſter vulnerary potions; this which followeth is excellent: ℞ *cydon. ineiſ. nu^ro* iiii. *equiſeti, ſumach. baccar. myrt. an.* ℥iii, *roſ. rub. ſiccat. pug.* ij. *balauſt.* ℥ ß. *coq. iſta in lib.* 16. *aq. font. aut pluvial. ad* 3. *partis conſumptionem, ac coletur decoctum. In colatura diſſolve ſyrup. è roſ. rub. ſiccat. & mell. roſat. an.* ℥vi, *ſyrup. myrtini* ℥iii, *gummi tragacanthi* ℥ ß. *Nil capiat æger præter iſtud decoctum ante diem decimum ſi conſtent vires.* Although the partie be very dry, yet let him not drinke any water, for that would bring inevitable death.

The topicks. As for the topicks, anodine and agglutinative medicaments arebeſt, as a digeſtive made of Cyprian Turpentine, the yolke of an egge, and ſome of the oyle of egges: you may uſe your artificiall balſames brought to a reaſonable thicke conſiſtence, with the white joyners vernice, and Turpentine.

Now only remaineth, of all the wounds in the parts of the *abdomen*, to ſpeake of thoſe which happen to the parts deſtinat for procreation.

Wounds of the matrix. Thoſe are the matrix in women, and the genitals in men.

Signes. If the matrix, then it is either wounded in the necke, or even into the capacitie of it. If the wound pierce to the capacity, then bloud will iſſue out at the privie part, and the paine will be about the groines.

The prognoſticks. *Celſus* eſteemeth theſe wounds to be of difficult curation:

Theſe

Theſe reaſons may bee yeelded: Firſt, it is thin and membranous, unleſſe the woman bee great with childe. Secondly, becauſe it is of an exquiſite feeling; and ſo paine, a fever and inflammation may enſue. Thirdly, becauſe it hath a notable conſent with the principall parts of the body. Fourthly, becauſe it is a moiſt place. Fifthly, becauſe it is, as it were, the ſinke of the body to receive impurities, which is the cauſe that theſe wounds may become cancerous ulcers. Ordinary wounds, even of the body of the matrix, are not to be accounted deadly, becauſe infants have beene by inciſion taken out of the matrix, the mother remaining alive. This kinde of delivery is called *Partus Cæſareus:* And the whole matrix hath beene taken out from the body, the party living long afterward. Peruſe *Skenckius* of this matter, *lib.* 4. *obſervat. de uteri affectibus*, where you may reade of ſundry examples. Dreſſe the matrix as the bladder.

Seeing the Genitals of man may be wholly taken away, and yet the partie live, and that the wounds of theſe are not deadly, as appeareth in thoſe who have beene gelt, and have loſt their prick, I thinke it ſuperfluous to diſcourſe of them, and the rather, becauſe the dreſſing of them doth not differ from that which is uſed to other parts of the ſame nature.

LECT. XXXII.

Of wounds of the nervous parts.

BY the nervous parts, here I underſtand three ſorts of parts: to wit, Sinewes, Tendons, and Ligaments.

That a Sinew is wounded, you ſhall know firſt by the part: If great and many ſinewes be in the place wounded, or paſſe by it; the anatomy teacheth this. Secondly, you ſhall know this by the ſymptomes, for there will enſue a pulſation, inflam- Signes of a ſinew wounded.

inflammation, convulſion, raving, if it be not cut aſunder, and at laſt ſometimes mortification.

The differences of ſolution of unitie in ſinewes.

The ſolutions of unitie which happen unto ſinewes, are foure; a Puncture, an Inciſion, a Contuſion, and a Diſtortion.

Why wounds of the ſinewes are dangerous.

Of the wounds of ſinewes receive theſe prognoſticks: Firſt, wounds of the ſinewes are dangerous: Firſt, becauſe they are of an exquiſite ſenſe or feeling, both becauſe the membrane, wherewith they are covered, proceedeth from the menings, and that they are impregnat with plentie of animall ſpirits. Secondly, by reaſon of the conſent which they have with the braine, and the *ſpinalis medulla*: for according to *Galen, lib. 12. de uſ. partium, c. 11.* the braine is the well-ſpring, the *ſpinalis medulla* the river, and the ſinewes the creeks. Thirdly, by reaſon of the fearfull ſignes, which follow after that a ſinew is wounded, which are extreme paine, afflux of humors, a gangrene, a ſharpe fever, raving, and a convulſion.

The differences of a puncture and preſages.

As for a puncture, it is either not conſpicuous, not to be diſcerned by the ſight, or it is conſpicuous: The firſt is called *punctura cæca*; the ſecond, *punctura aperta*: of the two, the *cæca* is the worſt; for locall medicaments cannot ſo well be applied to the part wounded.

The generall indications of curing of wounds in ſinewie parts.

Before I come to the curation of this particular ſolution of unitie in ſinewes, I will acquaint you with the generall indications required in the curation of wounds of nervous parts in generall: Firſt, bloud is to be let. Secondly, the bodie is to be purged: See *Galen, c. 2. lib. 6. method. Æginet. li. 4. c. 54.* theſe prevent the affluxion of humors. Thirdly, the partie muſt uſe a very ſlender diet. Fourthly, wee muſt provide that the aire, which the patient doth enjoy, be warme; for if the aire be cold, a convulſion might enſue. Peruſe *Aphor. 15. ſect. 5.* Wherefore when you dreſſe ſuch wounds, you are to uſe warme cloathes and ſtupes, and the medicaments warmed.

Now to come to the curation of a puncture in particular:

If

If it be *punctura cæca*, theſe locall medicaments are apt. Theſe medicaments muſt be hot, drying, of ſubtill parts, to digeſt drie putrefaction, and attract. See *Galen, li. 6. method. c. 2. & l. 3. ſecundum genera:* ſuch are *ol. rutaceum, chamemelinum anethinum, coſtinum, liliorum alborum, vulpinum, de caſtorio, de euphorbio lumbricorum hyperici cum gummis, de ſcorpionibus, terebinthinæ.* *Galen* adviſeth to uſe Sallet oyle warmed, and applyed with wooll, old oyle is beſt. *Paræus, lib. 9. c. 38.* adviſeth to adde to it *aqua vitæ*; for the thin and virulent humor, which iſſueth from the ſinew, is ſpent and dried the more. *Galen li. 6. method. c. 2. & li. 3. ſecundum genera*, commendeth a medicament made of *Euphorbium*, which is this: ℞ *cer. part. 1. terebinthin. pic. an. part. dimid. Euphorb. part.* 12. According to the tenderneſſe or hardneſſe of the body, more or leſſe of the *Euphorbium* is to be uſed. You ſhall know your medicament to be proportionate to the griefe; firſt, if the partie feele a pleaſant heat, as is that of the Sunne in temperate weather: ſecondly, if the part doth pleaſantly itch. If the party feele no heat, then there can be no attraction; if it be immoderat, it will attract humors, and cauſe inflammation.

The curing of a hidden puncture.

The topicks.

If by the application of theſe medicaments, the paine and other ſymptomes ceaſe not, then croſſe inciſion of the skin is to be made, that the medicaments in their full force may be applyed to the punctured nerve. When the puncture is either thus laid bare by inciſion, or at the firſt by the wounding inſtruments; it is not requiſite to apply to it medicaments ſo hot and drying, and when it is hid, to ſhun inflammation: Wherefore your ordinary artificiall balſames dropped in warme will ſerve; for by their unctuoſitie they ſmooth the part, by their heat they make attraction, and ſo mitigate pain by diſcharging the place of the ſanies, and by their moiſture they open the orifice, and keepe it open.

Inciſion.

The inciſion of a nerve is either ſtraight and direct, or tranſverſe. If it be tranſverſe, it is either quite cut aſunder, or but in part.

The curing of an inciſion of a nerve.

A nerve quite divided is leſſe dangerous, than that which

Differences and prognoſticks.

is but only cut in part, according to *Guid. Magn. Chirur. tract. 4. doct. 1. c. 4.* See *Galen. l. 6. method. c. 2 Avicen. l. 3. c. 4. Fen. tract. 4. c. 1, 2, 3, 4, 5, 6, & 7.* The reaſon of this is, becauſe a nerve being quite cut aſunder, cannot ſend any harme to the braine.

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A nerve quite cut aſunder cannot admit any conſolidation, according to the firſt intention. See *Hippoc. Aph. 19. ſect. 6.* where he ſaith, when the bone is wounded, or the cartilage, or a nerve, or the thin part of the cheeke, or the *præputium*, it doth grow againe or unite. He hath the like *Aphor. 28. lib. 7. Ariſtot. lib. 3. hiſtor. animal.* ſubſcribeth to him: for theſe parts are ſpermatick.

The curation.

As for the curation of ſuch a wound, the Topicks which are uſed ought to dry with little mordication or biting, according to *Galen, lib. 6. method. c. 3. & li. 3. ſecundum genera, c. 2.* ſuch are *unguentum de calce lota, & unguentum diapompholix.* If the whole nerve be cut aſunder, no convulſion can enſue, becauſe both the ends give way. This kinde of wound is cured eaſily by ſarcoticall medicaments, whereof I have ſpoken heretofore ſufficiently. In this kinde of wound the motion of the part into which the nerve is implanted to move is aboliſhed. If the nerve be cut aſunder but in part, firſt it is to be dreſſed with the medicaments before preſcribed; but if the ſymptomes, as paine, &c. and a convulſion be like to enſue, the beſt courſe is to cut the ſinew or tendon quite aſunder, rather than by deferring of the inciſion to expoſe the party wounded to the danger of death. This being done, uſe anodine and deſiccative medicaments. When you have thus dreſſed the wound above your pledgets, either *diapalma*, or *diachylon ſimplex*, in the ſummer malaxed with the oyle of Roſes, Quinces, or Myrtils; for the tenderneſſe of the part will hardly admit the application of any firme emplaſter. Laſt of all, you are to rowle up the part with *faſcia expulſiva*, whereof I have ſpoken in its proper place, partly to expreſſe the *ſanies* which doth gather in the place, partly to ſtay the affluxion of new humors.

Of a contuſion of a nerve.

Now it is time to come to the contuſion of a nerve. This may

may be either ſolitary, or with ſome ſolution of unity. If it bee ſolitary, then you are to foment the part with Sallet-oyle hot, and to apply it with wooll. If the skin be divided, then medicaments drying and uniting the parts are to bee uſed. Such is *emplaſtrum fodicationis* malaxed with the oyle of *hypericum*.

Laſt of all, a diſtortion may happen to a nerve by a fall, extraordinary motion, or ſome other violent externall cauſe, which may hinder the motion of the part. In this caſe apply *emplaſtrum de mucilaginibus*, or *diapalma*, having *gummi ammoniacum* added to it. Of a diſtortion.

After contuſions and diſtortion of ſinewes, a hardneſſe often remaineth, which cauſeth a numbneſſe of the part. This proceedeth from the ſetling of groſſe humors in the place. In this caſe you are to uſe medicaments which ſoften and digeſt, as the oyle of white Lilies, Gooſe-greaſe with *bdellium*; but the oyle of ſheeps and neats feet impregnat with the mucilage of the marſh-mallow, Linſeed and Fenugreeke, exceedeth all other medicaments. Let the part be embrocate with this medicament warmed; and let *emplaſtrum magnum cum gummis* malaxed with *ſtorax liquida* bee applyed. Now it remaineth that I ſpeake ſomewhat of accidents which uſually fall out when a nerve is wounded. Of hardneſſe,

The firſt of theſe is an inflammation: you muſt meet with this by applying medicaments, which are cooling and drying; for theſe both abate the inflammation, and correct putrefaction, ſuch are Beane-meale, Barley-flowre, the meale of Vetches, Ciche-peaſe, or Millet boyled with ſufficient ſtore of Oxymell, untill they be brought to the conſiſtence of a pultice: But before you apply this medicament to the member, embrocate it with oyle of Elders, having mingled with it a little Roſe-vineger. Of an inflammation.

The ſecond ſymptome is Paine: Here you muſt uſe liberall phlebotomie, purging, and a ſpare dyet. If the partie cannot admit bleeding, then uſe ventoſes with ſcarrification, leeches, veſicatories in the oppoſite parts; for a locall medicament Of paine.

cament, uſe a cataplaſme made of Beane-flowre, Mallowes, Grounſell, Violet-leaves boyled in milke, and having *unguentum populeum* mingled with the cataplaſme, when it is taken from the fire.

Of a convulſion.

The third ſymptome which may trouble both you and the patient is a convulſion: Of this accident *Hippocrat. aphor.* 2. *ſect.* 5. ſo pronounceth: If a convulſion enſue upon a wound, it is deadly. But this muſt happen after too great effuſion of bloud, as he explaineth himſelfe in the next Aphoriſme; for if a convulſion fall out by reaſon, by repletion, it is cured by bringing the body low, by uſing the generall curative meanes in that meaſure as the circumſtances ſhall ſhew. If a convulſion happen, then you muſt embrocate all the *ſpinalis medulla* from the head to the coccyx, with Sallet-oyle warmed, and afterwards applying rowles of wooll, or a ſheepes skin, newly killed, to the part: Then the member wounded is alſo to be dreſſed; ſo if the wound be in the hand, you muſt begin to foment in the arme-pits, by the which the nerves march, and then to proceed to the *vertebræ* of the neck and breſt with oyle and wooll. But if the foot be wounded, then you muſt begin the fomentation at the *vertebræ* of the loynes, and *os ſacrum*, and ſo to proceed to the ends of the toes. It is not amiſſe to hold the whole member in warme oyle, as in a bath, if it may conveniently be done. So much then of wounds of a ſinew.

Of wounds of a tendon.

If a tendon be wounded, you ſhall perceive it by theſe two ſignes: The firſt is, if the wound be neare to the joynt, for the tendons are the endings of the muſcles, and the ends of muſcles ever end either at the joynts, or neare to them. The ſecond is, if the wound be received in parts which are not fleſhie: ſuch are the backs of the hands and feet. As for the curation of theſe wounds, the indications ſet downe in the curation of the wounds of a ſinew will ſerve.

Of wounds of the ligaments.

If a ligament be wounded, ſeeing they are not ſo ſenſible as thoſe of the nerves and tendons, they procure not ſo fearfull accidents: only drying medicaments, and not too hot, are

here

here to bee uſed to conſume the ſanies, leſt the ligament rot. Stronger medicaments may here be uſed, becauſe a tendon is not ſo ſenſible; in this caſe uſe oyle of maſtick, the naturall balſame, artificiall balſames, and drying and conſolidating ponders; aboue apply *emplaſtrum fodicationis*. In curing all theſe wounds which happen to the nervous parts, take heed that you uſe not a fomentation: for that moiſtneth and increaſeth putrefaction.

This one thing let me inſinuate unto you, that if one be offered to you, who hath the great tendon, inſerted into the heele wounded, that you ſuffer him not to walke before it be perfectly united and skinned, for otherwiſe it will breake open againe. An obſervation.

LECT. XXXIII.

Of wounds of the Joints.

A Joint is the ſetting together of bones for the performing of free motion according to *Galen. lib. de oſſib. in principio.*

Now wounds of the joints are made either by a puncture or inciſion; and theſe are either in the ſipper compaſſing parts, or elſe they pierce to the cavity of the joynt. The ſolution of unity in the joint is apparent to the eye: wherefore it is needleſſe to ſet downe any ſignes.

As for the prognoſticks receive theſe: All wounds of the joints are dangerous: Firſt, becauſe they are of an exquiſit ſenſe, by reaſon of the nerves, tendons, and membranes: wherefore ſharp paines doe enſue, which procure affluxion of humours, from whence ſpring inflammations, fevers, watching, loathing of food, thirſt, convulſions, gangrens, weakneſſe, and ſometimes death. Secondly, as all

wounds of the joints are grievous, ſo great wounds piercing to the cavity are moſt dangerous, yea moſt commonly deadly if they be inflicted into great joints, and the *aqua articularis*, the joint water iſſue out. Of this water, ſee *Celſ. li. 5. c. 26. Par. li. 19. c. 39. Lang. li. 1. ep. in præf. & li. eod. ep. 3. Plat. tom. 2. prax. fol. 782. & 933. & 737.* After that this naturall humour is let out, then ſucceedeth the iſſuing out of an excrementitious humour. *Celſus* affirmeth it either to be a thin & whitiſh ichor, or to be a thick glutinous and whitiſh humour, like to white honey, which he calleth *meliceria*. This terme by him *lib. eod. 5. cap. 28.* is taken for a kind of ulcer. *Paræus* ſaith that this excrement is ſometimes thick and white, and ſometimes thin. *Langius* likeneth it to whey. *Platerus* averreth it to bee a watriſh ichor. This diverſity doth proceed from the diverſity of the temperature of the bodies of wounded perſons. It is cold and moiſt, and is cauſed of the alimentary juyce, which is ſent to nouriſh the joint: but it is corrupted by the weakneſſe and diſtemperature of the joint wounded.

Queſt. A queſtion may here be moved, why a greater quantity of quittour doth flow out of a joynted wound, than out of an other part, if the quantities of the wounds be equall.

Anſw. Many reaſons may be alleaged for this: Firſt, the paine which followeth after a wound in the joint, is ſo grievous, that it maketh a greater attraction of humours: Secondly, the joynts are of a ſubſtance without fleſh and bloud, and of temperature cold, ſo that they cannot concoct the ſuperfluous humours which doe flow thither, and turne them to a laudable quittour: Thirdly, by reaſon of their weakneſſe they cannot ſo forcibly repell the humours flowing, as other fleſhy members can, by reaſon of their heat: Fourthly, their ſituation furthereth the admiſſion of ſuperfluous humours much, they being ſeated in a dependant part.

The curation of a puncture. As for the curation, if it be a puncture, it is to be dreſſed as the puncture of a nerve or tendon: Shunne cold, relaxing, moyſtning and unctuous topicks, unleſſe paine enforce you to uſe anodine meanes. Cold doth nip wounds, hardneth the skin,

s kin, hindereth ſuppuration, extinguiſheth the naturall heat, cauſeth blackneſſe, bringeth aguiſh fits, and convulſions. Peruſe *Hippoc. aphor.* 20. *Sect.* 5. If the wound be procured by inciſion, then either the brims are reaſonable neere one to another, or elſe they gape much being much ſeparate. If they be farre aſunder, then you muſt uſe ſtitching firſt of all to bring the brims together; you muſt onely ſtitch the skin in perſons of ripe age, but in children you may the ſubjacent parts; for in ſuch they will admit unition.

The curation of a wound of a joint cauſed by inciſion.

Galen 2. *de fractur.* affirmeth that all parts of the body delight to be covered with the skin, which Nature hath provided for an univerſall cover. If this may be affirmed of any, it may be moſt juſtly pronounced of the joints, for they have but ſmall ſtore of naturall heat, which may be extinguiſhed, if the cold aire be ſuffered to pierce unto them, which is hindered by bringing the brims of the wound by ſtitching. When the wound is ſtitched, there muſt be left a ſmall orifice in the depending part to admit a tent, that the quittour may be diſcharged.

Stitching.

This being done, if the wound pierce not to the cavity of the joint, dreſſe the wound with ſome good artificiall balſame having mingled with it a drying and healing pouder; ſuch is this: ℞ *thur. ſang. dracon. myrrh. aloes hepat. maſtich. an.* ℥ij. *rad. ſymphyt. centaur. major. borac. ſarcocoll. an.* ℥j. *fiat pulvis, capiat balſami* ℥j. *& pulv.* ℥i ß. Above apply *emplaſtrum ſodicationis* or this cataplaſme: ℞ *furfur. mucri, fur. hord. & fabar. an.* ℥ij. *flor. chamel. & melilot. an. pug.* ij. *lixivii communis lib.* i. *acet. ſambucin.* ℥iv. *coq. ita ad cataplaſmatis conſiſtentiam, tum addatur ung. popul. ol. roſ. & myrtill. an.* ℥j. This is excellent to prevent paine, or to aſſwage it if it be preſent. All the applications muſt be actually hot: for actuall heat doth concoct and diſcuſſe excrementitious humours in the joints, and ſtrengthneth them. If the wound pierce to the cavity of the joint, the medicament muſt be very drying: firſt, becauſe the bones and ligaments whereof the joints are framed, are of their owne nature very dry, and ſo require dry medicaments:

Locall medicaments.

ſecondly, becauſe they have not feeling, and ſo may ſuffer very ſtrong medicaments: thirdly, becauſe plenty of thin quittour is gathered in wounds of the joints, a very drying medicament is required.

Uſe then greater quantity of the former pouder with the balſame, or mingle it with *Arcæus* his liniment, and above apply the former medicaments.

The poſture of the member.

Let mee give you notice of one thing, that in curing a wound of the joint you have a ſpeciall care of the poſition of the member, for a perverſe poſture increaſeth ſymptomes, and bringeth diſtortion, numneſſe, and contraction ſundry times, after that the wound is cured. Wherefore if the upper part of the ſhoulder be wounded, a large bowlſter muſt be put in the arme pit, and the arme caried in a ſcarfe to beare up the lower part of the arme, that the brims of the wound may the more aptly conſolidate. If the lower part of the arme be wounded, you muſt cary it in a poſture-meane, betweene extenſion and contraction. And when the lips of the wound begin to unite, you muſt cauſe the patient to uſe a moderate motion of the arme, leſt it prove leſſe plyable to motion, after that the wound is cured. If the joint of the elbow be wounded it muſt bee ſo placed that it bee neither too much contracted, nor too much extended.

Wounds in the *muſculus biceps.*

The German Chirurgeons here are very ſcrupulous in wounds of the *muſculus biceps*, which they call *die mauſs*, or the mouſe, for the likeneſſe it hath with a mouſe, for it hath a ſmall tendinous beginning and ending, but a thick fleſhy belly. They eſteeme the wounds of this muſcle, which with the *brachicus* doth bend the elbow, to be deadly: thus I would have you to diſtinguiſh. It may be wounded both in the beginning or head and tayle, and in the belly alſo. Wounds in the beginning and inſertion of it are moſt dangerous, becauſe theſe parts are tendinous, and ſo of an exquiſit feeling, it is double in the beginning. If a wound bee inflicted in the belly of this muſcle, it is leſſe dangerous, becauſe it is fleſhy, yet a great flux of blood may enſue, becauſe it hath remarkable

kable veines and arteries, and great paine, becauſe it hath not ſmall twigges of the nerve. If the wreſts or joints of the fingers bee wounded, they muſt bee kept halfe ſhut, moving a ball in the palme of the hand: for if they bee kept ſtill extended they may prove unable to gripe when they are healed. If the articulation of the hip bee wounded, the thigh bone muſt bee kept in its cavity, which may be done by laying the patient on his back, and applying fit bowlſters and rowlers. If the knee be wounded, it muſt bee kept extended, if the party will not have the member contracted after the wound is healed. When the joints of the Toes are wounded, they are to be kept in their naturall poſture, not bending of them inwardly or outwardly. To conclude the method of curing of wounds in the joints, if they paſſe to the cavity, although they be cured, yet the member will remaine ſtiffe.

What things make wounds great.

Seeing wounds are accounted great for 4. reſpects. Firſt, by reaſon of the greatneſſe of the ſolution of unity. Secondly, by reaſon of the excellency of the part. Thirdly, by reaſon of the ill conſtitution of the party wounded. Fourthly, by reaſon of the grievous ſymptomes. In the firſt and two laſt reſpects, wounds of the joints may prove great.

What make them deadly.

And ſeeing wounds may foure manner of wayes cauſe death. Firſt, if the office of the part be neceſſary, as that of the lungs. Secondly, if the part bee excellent, as the braine. Thirdly, if the flux of blood cannot bee ſtaied, as are the wounds of the liver, and the great veſſels. Fourthly, if evill ſymptomes doe follow, as appeareth in wounds of the bladder: Wounds of the joints moſt commonly prove deadly for the fourth cauſe,

Of vulnerary potions.

Before I put an end to this Treatiſe of Wounds, wherein I have perſiſted the longer, becauſe it is an object whereabout Chirurgeons are moſt frequently buſied, I will ſpeake ſomewhat of vulnerary potions, becauſe I have often made mention of them, and have ſet downe the deſcription of ſome, in the curation of ſome dangerous and great wounds.

Of their qualities.

As for their qualities, they are drying, familiar to the naturall heat, and radicall moyſture, and by a ſecret faculty they correct malignity.

The operations of them are theſe, they doe purifie the bloud, cleanſing it from all impurities, and excrementitious humours, they cleanſe wounds and ulcers alſo, they agglutinate broken bones, and unite ſinewes, they haſten the ſcaling of bones, they procure the expulſion of ſtrange bodies in wounds; they diſſolve clotted bloud; they dry up ſuperfluous humidity, and withſtand putrefaction. Let no man wonder that they have ſuch admirable effects. Wee know that their meats and drinks, yea medicaments which are hurtfull in ſome diſeaſes, and at ſome times as in a burning fever to drinke wine, or to miniſter hot or obſtructing medicament: Shall wee not then thinke that Nature hath provided meanes helpfull and profitable in griefes; unleſſe wee will take her to bee rather a ſtepmother, than a loving mother? But ſeeing God by his providence did fore-ſee that man would fall, and become mortall, and that diſeaſes (the meanes to bring man to his end) would increaſe, of his own goodnes; he from the beginning created meanes to ſecond Nature againſt diſeaſes, and to defer death by prolonging life by uſe of ſuch things as are familiar to nature and contrary to the griefe: Such are vulnerary potions in wounds.

Vulnerary Simples.

The chiefeſt of the ſimples are theſe: Scabious, ſanicle, bugle, mouſe-eare, burnet, madder, tanſey, comfrey, vervene, biſtort, tormentill, peruincle, centory the greater, borrage, hore-hound, adders-tongue, betony, valeriane, our Ladies mantle, avens, *cardiuus benedictus*, the cordiall flowers, ſpeedwell, agrimony, the capillar herbes, prunella, oſmund, clarey, gentian, herniaria, *ſcordium*, cats mint, cinquefoyle, mead-ſweet, colts-foot, S. Johns woort, plantane, knotgraſſe, ſheepheards purſe, yar row, buds of bryars and the oake, pyrola, lunaria, &c. Amongſt theſe ſome are hot, and ſome temperat.

Thoſe

Thoſe which are hot are not to be uſed untill the ſeventh day be paſt, when ſymptomes moſt commonly ceaſe, and concoction appeareth: for they would heat and attenuat the bloud, and cauſe defluxions. Theſe ſimples you may uſe two manner of wayes: Firſt, in decoctions: Secondly, in infuſions, uſing Wine, Ale, or Beere, as ſhall bee thought fitteſt. The uſe of theſe.

Let this bee a patterne of a decoction: ℞ *Sanicul. bugul. ſcab. beton. nepetæ, aa. man.* ß. *rad. centaur. majoris, ſymphyti, borrag. an.* ℥ ß. *paſſul. major. excinat.* ℥ij. *liquirit.* ℥vj. *ſemin. hyper. & card. benedict. an.* ʒiij. *flor. cord. pug.* ij. *Coq. iſta in aq. font.* ℔. viij. *ad mediæ, ac coletur decoctum: Aromatizetur decoct. cinamon.* ʒv. *illique addantur mel roſ. & ſyrup. myrtin. an.* ℥i ß. *vini albi* ℔. ß. *Doſ.* ℥iv. *mane, & tantundem hora quarta pomeridiana.* Some of the afore-named ſimples may bee boyled in the patients broths. Thus you may frame to your ſelves decoctions fit for the conſtitution of the party, the time of the griefe, the part wounded, and the time of the yeere.

FINIS.

Imprimatur. Tho. Wykes *R. P. Epiſc.* Lond. *Cap. domeſt.*

STERLING
METRIC

A TREATISE OF THE FIRST PART OF CHIRURGERIE, CALLED BY MEE Συνθετικὴ, THE PART WHICH TEACHETH THE REunition of the parts of the bodie disjoyned.

CONTAINING THE methodical doctrine of Wounds: delivered in Lectures in the Barber-Chirurgeons Hall, upon Tuesdayes, appointed for these Exercises, and the keeping of their Courts.

By ALEXANDER READ, Doctor of Physick, a Brother of the same Company, and one of the Fellowes of the Physicians College of the famous Citie *London*.

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rosis siccis. Vide Fallop. Comment. in lib. Hippoc. de vulnerib. cap. c. 43. & Paræum lib. 9. c. 21.

Of the discoloring of the *dura mater*.

Discoloring or blacknesse may proceed from five causes: *viz.* From the violence of the contusion; From coagulat bloud; From the coldnesse of the aire; By the application of unproper medicaments; Last of all, from putrefaction.

The causes of it.

If the blacknesse proceed from the violence of the contusion, it seldome continueth above foure dayes. In this case use *oleum rosaceum*, and *mel rosatum*; or the oyle of egges, with a little *aqua vitæ*, and some of the *pulvis cephalicus*, with a few grains of the powder of saffron.

The curation of it.

If congealed bloud hath caused a blacknesse, then apply this medicament: ℞ *aq. vit.* ℥ij. *pulv. gran. tinctorum* ʒij. *croci* ℈. *mellis ros.* ℥ij ß. *Sarcocoll.* ʒ. 3 *leniter bulliant omnia: colatura utimini donec evanuerit nigredo.*

If unproper medicaments have caused the blacknesse of *Dura mater*, then it is to be cured by the application of such medicaments as are in faculty contrary to those which have beene applyed; so if humid, unctuous, or fatty medicaments have beeene used, you are to change these, and to apply those which are drying, as the cephalick powders mingled with *mel rosatum*, *oleum rosatum*, or both mingled together. If sharp medicaments have been applyed, in stead of these mild and lenient medicaments are to be used, as the oyle of *hypericum*, or of earth-wormes, with a little saffron: for it is certaine that moyst medicaments may cause blacknesse by increasing filth, and sharp medicaments by their immoderate heat may cause this same.

If blacknesse proceed from putrefaction, which you may discerne by the strong sent of the *sanies* flowing from the wounded part, then use these medicaments which follow: ℞ *aq. vitæ* ℥i ß. *syrup. absynth. & mell. ros. an.* ℥ij. *unguent. Ægypt.* ʒi ß. *sarcocoll. mirrh. aloes an.* ʒj. *vini albi potent.* ℥ß. *bulliant omnia leniter, colentur, ac serventur ad usum. It.* ℞ *aq. plantag.* ℥j. *unguent. Ægyptiac.* ʒi ß. ℞ *præcipitati* ℈j. *Misc. applicetur*

tur istud medicamentum calefactum post agitationem. If by these meanes the putrefaction cease not, but persevere, and the tumour increase and grow above the hole of the skull being immovable, black and dry; If the eyes of the patient appeare of a firy colour, bunch out, and bee still moving; If the party still tosseth and tumbleth himselfe in his bed, and rave, the sick person will dye, and the sooner if these symptomes continue constant and uniforme. This must of a necessity ensue both by reason of the extinction of the naturall heat, and likewise the gangrene of a noble part. *Vide Fallop. loc. cit. c. 41. & Par. lib. 9. c. 21.*

The *Pia mater* is very thin, and cleaveth so fast to the braine, that it cannot bee wounded, unlesse the braine also bee offended. Wherefore such wounds for the most part are deadly, for the braine being laid open unto the aire, easily is corrupted, by reason of the externall cold, which extinguisheth the weake heat of the braine, and by reason of the moisture which both falleth upon the braine, and is gathered in the substance of the braine it selfe, by reason of its weaknesse.

Of wounds of the *pia mater.*

First then if any memorable flux of blood happen by reason of the multitude of veines which are in the *pia mater*, it is to bee stayed with *Galens* medicament set downe by him, 5. *Method. cap.* 4. whereof I have spoken heretofore. Then the part is to bee cured with medicament warming and drying, which I have set downe in the curation of the *Dura mater* wounded.

The curation of them.

Now wounds which happen in the parts contained in the head, are to be handled: These are two, *Cerebrum*, and *Cerebellum*. To the braine these griefes may happen; a wound, apostemation, putrefaction, sideration, a concussion, a *fungus*, and a tumour by reason of flatuosity.

Now as concerning wounds of the *cerebrum* or braine, these five points may bee demanded. First, which are the signes of the braine wounded. Secondly, what symptomes doe ensue. Thirdly, whether wounds of the braine bee curable

gable or no. Fourthly, how they are to be dressed. Fifthly, what symptomes usually remaine after that a wound of the braine is cured: of these I will speake in order.

Signes of the braine wounded.

As concerning the first, the signes of the braine wounded, are these which follow: First, a fever and vomiting of choler: *Hippoc. aphor. lib. 6. 50.* saith, If any have the braine wounded, they must have a fever and vomiting of choler. The same he repeateth, *Coac. prænot. 500. & 507.* This same *Celsus* delivereth in most eloquent words, *lib. 8. cap. 4.* Secondly, losse of speech. *Hippoc. sect. 7. aphor. 58.* They who have suffered a vehement concussion of the braine, immediately become dumbe. Thirdly, a fall, and slumbering. *Coac. prænot. 499.* Fourthly, senslesnesse, dimnesse of the sight, giddinesse. *2. Prorrhet. & lib. de vulner. cap. Fernel. lib. 7. pathol. c. 8.* hath these words: If the substance of the braine be hurt, the reason becommeth weake, and all symptomes increase, and oftentimes a portion of the braine commeth out, not without danger of life. Fifthly, you shall pronounce the braine to be wounded, if the menings being divided, a substance like to fat come out; which notwithstanding doth neither swimme above water, neither doth melt with the fire, as fat doth. See *Parrey lib. 9. cap. 22.* Sixthly, if the braine bee hurt, the quittour will bee thick, round, and like a marrowie substance.

Symptomes which follow after a wound of the braine.

As concerning the symptomes which ensue, the braine being wounded, these are they; foaming at the mouth, darknesse of the sight, giddinesse, a convulsion, a fever, vomiting of choler, stupiditie, losse of reason, deafenesse, dumnesse, a palsey, a lethargie, and last of all, an apoplexie.

Prognosticks.

As for the third demand, all wounds of the braine are dangerous at the least, and that for these reasons: The first is the nobleness of the part, and the necessary use of the functions of it. The second is the motion of the braine; but a wounded part requireth rest, if it be to be cured. *Hippoc. lib. de ulcerib. circa principium.* The third is the humiditie of the brain; but the curation of ulcers and wounds is performed by exsiccation,

Why the wounds of the braine are dangerous.

ſiccation, according to *Galen. lib. 4. method. medend. cap. 5.* The fourth is the coldneſſe of the braine, which engendreth many excrements, and the more when a wound hapneth, which weakneth the part. The fifth is the conſent of the ſinewes, which ſpring from thence. The ſixth, becauſe remedies paſſe not readily to the braine wounded. Three cauſes may be alleaged, why ſome perſons eſcape ſometimes, having received great wounds in the braine: The firſt is the wholeſome and ſtrong conſtitution of the body: The ſecond is the artificiall dreſſing of the wound, for as ſundry recover of great wounds, if they bee dreſſed according to art; ſo many die of ſmall wounds, if they be negligently or ignorantly dreſſed: Thirdly, ſuch ſtrange events are to be aſcribed to the providence and mercie of the almighty God, who of his infinit goodneſſe by his ſecret judgement prolongeth the lives of ſome, as hee ſhortneth the dayes of others.

Prog. 2. That great wounds of the braine have beene cured.

Although all wounds of the braine be dangerous, for the reaſons which I have alleaged; yet great and dangerous wounds have beene cured: That this aſſertion is true, I will prove by the teſtimonies and experiments of famous Writers both ancient and moderne. Amongſt the Ancients *Galen* ſhall bee the ring-leader: Hee then writing upon the eighteenth Aphoriſme of the ſixt booke of *Hippocrates*, affirmeth that hee ſaw one healed, who had received a remarkable wound in the braine, in *Smyrna* of *Ionia*, while his maſter *Pelops* was alive; he affirmeth indeed this to be very rare, *l. 19. de ſua part.* He maketh mention in like manner of a young man, who recovered, when he had received a wound in one of the fore ventricles of the braine. *Paulus Æginet. lib. 6. c. 88.* affirmeth that ſundry have eſcaped death, and have recovered their health, when they have beene wounded in ſome principall part, above all expectation. *Chriſtophorus à Vega, comment. Aphor. 15. lib. 6. Hippocratis* hath theſe words; Wounds of the braine, if they reach to the ventricles, they are not cured; but wee have ſeene many others cured, which paſſed to the ſubſtance of the braine, and out of which ſome portion of

the braine came out. *Horat. Augenius, lib. 9. Epist. 2.* writeth thus; We saw once the whole substance of the braine wounded, and the ventricles cut asunder, and that a portion of the braine came out of the wound as soone as it was made, and that notwithstanding the party was cured. The cause of this event was the strength of the body. *Gemma lib. 1. cap. 6. Cosmoc.* saith, It greatly concerneth Physitians to note, that even weake persons somethines escape of grievous diseases, wherein the signes threaten imminent danger. So lately an ordinarie person was by our help healed, when as a shiver of the skul passed thorow the menings, and some of the substance of the braine came out. *Ioan. Baptista a Vrade, lib. 1. Chirurg. cap. 14.* a Venetian, affirmeth, that hee cured sundry, whose braines were wounded, and nameth sundry witnesses. *Fallop. cap. 45. de curatione vulnerum cap.* hath these words: A great portion of the braine may come out, and yet life remaine: wherefore forsake not the wounded persons, for I my self have made triall of strange things. *Carpus tractatu de fractura cranii*, affirmeth that he saw six persons who recovered, when as a notable quantitie of the braine came out of the wounds, and that they only deny such good events, who have seene but a little. *Brasavola in comment. 3d. Aphor. 18. lib. 6. Hippocratis*, affirmeth that hee saw two who escaped after that their braine was wounded. *Nicol. Massa, tom. 2. epist. 11.* hath these words: I take God to witnesse, and many yet alive can witnesse that I have cured sundry by convenient medicaments and art, whose skuls, membranes, and braines have beene wounded, and immediately he nameth sundry. *Theodoricus, l. 2 cap. 2. Chirurgiæ* affirmeth boldly, that he was as sure that wounds of the membranes, the substance of the braine and ventricles may be cured, as he was of death. *Volcher. Coit. li. observ. anatom. Chirurgicar.* bringeth sundrie instances, that wounds of the braine may be cured. The like hath *Iacobus comment. in 3. aphor. 3. lib. 1. sect. 3. coac. Hippocrat.* Petrus also *Arcæus lib. cap. 6.* who doth alleage foure examples of this truth: and *Ambrose Parrey lib. 9. cap. 22.* alleageth some: and *Gualtherus Fabricius*

Fabricius Observ. Chirurg. cent. 1. observ. 13. doth set downe some. The testimonies and experiences of so many famous Authors, may perswade any man, not contentious, that wounds of the braine sometimes have beene, and yet may bee cured, or else none will.

Topicks for wounds of the braine.

Seeing I have laboured to perswade you that the wounds dividing the substance of the braine it selfe may be cured; I thinke my selfe bound to acquaint you with the meanes, by the which so dangerous a curation is performed; which was the fourth point which I set downe to be discussed concerning wounds of the braine. *Ioan. Andreas à cruce Chirurg. lib. 1. c. 14.* Untill the fourteenth day be past, he will have the oyle of Turpentine, and the spirit of Wine to be applied: then hee will have the wound to be filled with this liquor following: ℞ *vini montan.* ℥xx, *succi beton.* ℥iiij, *succi calamint.* ℥ij, *myrrh. olibam. aloes, sang. draeon. centaur. minor. semin. hyperic. an.* ℥j, *contundend. contusa macerentur omnia in vase probè occluso: tum lento at claro igne exhalet tertia pars, ac colatur decoctum cui admisce ℈ir. vini* ℥vj, *ol. terebinthin.* ℥iiij. *Reponatur medicamentum in vase vitreo probe obturato.* Above this liquor apply *salvia cephalica*, and cover all with some fit emplaster. *Carter. lib. observ. anatomic. & Chirurg.* counselleth to foment the braine with a convenient decoction: such an one is this which is made of Betony, Calamint, Saint *Iohns* wort, Camomill, Dill, Eye-bright, &c. boyled in red astringent wine. The wound he will have to be dressed either with the naturall, or some good artificiall Balsame, whereof I have spoken sufficiently before. *Fallop. comment. in Hippoc. de vulner. cap. c. 45.* will have the oyle of Roses, mingled with the oyle of Turpentine, to be powred into the wound; and that not without cause, for the oyle of Roses is anodine, and the oyle of Turpentine warmeth and dryeth. This medicament he will have to be applyed untill the seventh day be expired; about which time most commonly appeareth a sequestration of the corrupt portion of the braine from the sound. If the substance of the braine, it being wounded, seeme to bee of livid

colour, and a stinking *sanies* flow from the wound, then those medicaments w^ch are dry and warme are to be applied, such is this which followeth: ℞ *mel.ros. & ol.ros. an.* ℥j, *aq.vit.* ℥ij, *misce.* When the wound yeeldeth a laudable quittour, then the oyle of Roses is to be omitted, and only *mel rosat.* or *syrupus myrtinus*, or *syrupus è ros. rub. siccatis*, mingled with *aqua vitæ* are to be used. As it is an evill signe, if the substance of the braine be of a livid colour; so if the portion which must be separate, represent a whitish haile-stone, and have not a very stinking smell, sheweth that nature is strong. *Hieron. Fabric. ab. aq. pend. part. 2. Chirurg. oper. lib. 2. c. 20.* delivereth this medicament, as an experiment of his owne: ℞ *farin. milii* ℥ß, *ol. Hispani* ℥j, *mithridat.* ℥vj, *balsami nigri na^lis* ℥iij. *aq. vit.* ℥v, *ol. de chal. cantho* ℥iß. *Misce.* This is undoubtedly a good locall medicament, because the ingredients powerly drie and resist putrefaction. This medicament I dare commend unto you: ℞ *balsami nigri, vernicis alb. & ol. hypericon. rubicundi facti ex multiplici infusione florum hyperici an.* ℥ß *misce.* This topick will warme, drie, resist putrefaction, and hinder the entring of the ayre.

Of the symptomes which remaine after that a wound of the braine is cured.

Now the fift point concerning wounds of the braine is to be touched, which is to shew what symptomes remaine most commonly after that a wound of the braine is cured. These then are they; the faltring in speech, and a palsey in the armes. *Ioan. Andr. à cruce Chirurg. lib. 1. c. 14.* Deafnesse. *Par. lib. 9. c. 22.* Decay of memory, stupiditie, and a weake judgement. *Coiter. lib observ. anatom. & Chirurg. Et Fallop. lib. prædict. cap. 45. Brassavol. ad aph. 18. lib. 6. aphor. Hippoc.* The yellow Jandise. *Arc. lib. 1. c. 6.*

2. Of an abscesse of the braine.

The second inconvenience which doth happen unto the braine is an apostemation. That this may happen, these underwritten Authors doe affirme; *Valeriol. lib. 3. observ. 8. Coiter. in observ. anatom. & chirurgicis. Fernel. de lue vener. c. 7. Par lib. 9. c. 8.* And although most Authors doe pronounce this event to be desperate; yet *Arcæus lib. 1. cap. 6.* relateth of one upon whose head a stone of a cubit in bredth and length, and

in thickneſſe twelve inches, but in weight foure and twentie lb. fell from the ingine, as it was hoiſted up to the building of a tower in *Valuerda*, and bruſed, depreſſed and ſhivered the skull: when this patient had lyen deſperate ſeven dayes, the eighth day three apoſtumes brake out, and within the ſpace of foure moneths the partie was perfectly cured, and afterward was married, for then he was but a young man.

3. 4. Of putrefaction and ſideration.

Putrefaction and ſideration are deadly ſymptomes, which are not diſcerned but by opening of the skull, and that for the moſt part when the partie is dead.

Of a concuſſion of the braine.

The firſt accident which happeneth to the braine, is a concuſſion or a commotion of the braine: If it be vehement, is is alwayes dangerous, and ſometimes deadly: If the commotion be violent, the partie becommeth ſpeechleſſe, according to *Hippocrat. lib. 7. aphor. 58.* where he ſaith; They who have ſuffered a ſtrong concuſſion of the braine, muſt of a neceſſitie become dumbe: reade *Galen* in his commentary upon this Aphoriſme. It is no other way to bee dreſſed than a fracture, when the *cutis muſculoſa* is whole. *Guilielm. Fabric. obſ. chirurg. cent. 1. obſerv. 7.* in this caſe anointed the whole ſcalp with the oyle of roſes and myrtils mingled together: opened a veine in the arme, and did inject ſharpe clyſters. After that a concuſſion is cured, ſometimes impediment of ſpeech, and forgetfulneſſe, may remaine during the reſidue of life, as witneſſeth *Paræ. li. 9. c. 22.* Hee will have bloud to bee drawne plentifully out of the *cephalica vena*, according to the ſtrength of the wounded partie, to aſſwage the ſymptomes preſent, and to prevent the comming of more grievous. The head he will have to bee ſhaved: then hee adviſeth to apply a cataplaſme made of things cold and moiſt, as a cataplaſme of barly flower, oyle of Roſes and Oxymel. Thoſe medicaments which are very aſtringent, as *unguentum de bolo &c.* are not to be applyed, becauſe they hinder the breathing of the fuliginous vapors thorow the ſutures, and other places of the skull; and ſo they are ſo farre from hindering of an inflammation, as that they increaſe it, if it hath ſeized upon the part

already, and bringeth one, if there be none: sharp clysters he will have too injected to draw sharp vapors from the head, and to hinder the ascent of them to the same, and the veine of the forehead, and those which are under the tongue, to be opened after the second day, if blood abound. Hee adviseth that strong frictions be used downwards, and that cupping-glasses be applyed to the shoulders. He will have the cooling and moistning astringent medicaments to be applyed untill the fourth day bee past: then discutient medicaments to be used; of the which medicaments I have set downe sundrie formes often-times heretofore. If you apply discutient fomentations, then see that you heat not the head too much, least you cause paine and inflammation.

5. 6. Of a *Fungus*.

The fifth inconvenience which may happen after that there is a solution of unitie in the braine, is a *Fungus*, or the mushrome of the braine.

What a *Fungus* is.

This is a tumor sometimes hard, without bloud, and of small sense; sometimes soft, of an exquisite sense, and of an ill smell, beneath narrow, and above broad, a kind of a maligne wart growing of the glutinous and thicke humors which are halfe rotten, congealed in the part, partly by reason of the aire, partly by reason of the coldnesse of the skull, the skull being opened, and the braine wounded; even as mushromes grow upon trees by a juyce which doth sweat thorow the barke. *Galen lib. 1. de loc. affectis*, doth make mention of this symptome; & *lib. 3. Epidem.* saith, that those excrescences which grow in wounds, and are called *fungi*, are caused by the thicknesse of the humor issuing from the affected parts.

The curation of a *Fungus*.

Although it fall off of it selfe sometimes, which *Coiter. lib. observ. anatom. & chirurg.* affirmeth that hee saw the flesh growing under it, depriving it of nourishment, yet if it increase, as it often doth, even to the bignesse of an hens egge in one night, as happened to *Guilel. Fabric.* as he witnesseth, *Observ. chirurg. cent. 1. observ. 15.* you must goe about to remove it with medicaments, which strongly dry, and mildly fret;

fret; such are the powder of Savin, Ocre, Hermodactils burned, the juyce of Purselaine, the powder of the yellow Turbith, warily applied, surpasseth all these. If it grow above the *cranium* about the bignesse of an hen-egge, then with a strong ligature you are to binde it, to procure the fall of it; then that which remaineth is to bee consumed with the meanes above specified. Beware that you use no strong catheretical meanes. See *Par. lib. 9. c. 19.* *Guilielm. Fabricius* cured the *Fungus*, which happened to his patient, within the space of fourteene dayes, with a fomentation, and a powder. The description of the fomentation is this: R *flor. & folior. beton. salv. chamomil. melilot. anethi, vef. fol. major. corticum. an. manip. i. semin. anis. & fenug. an. ℥j. coq. in lento igne in aq. font. & vini rub. astringent. an. lb. 4. ad consumptionem lb. iij. deinde colatur decoctum.* The description of the powder is this: R *rad. asarophyllat. angel. calam. aromat. an. ℥ß, rad. aristol. rotund. irid. guajaci, an. ℥ij, salv. rorismar. majoran. an. ℥j. fiat ex omnibus pulvis.*

The seventh and last accident which doth happen when the braine is offended, and the skull fractured, is a flatuous tumor. Of it *Guilielm. Fabricius* in the place afore-named so discourseth: A tumor may be caused like to a *fungus* of flatuositie. If the weake heat of the braine goe about to concoct the matter in and about the wound, it doth raise up flatuositie, and seeing it can breathe out thorow the *pia mater*, it doth puffe it up; for, I observed (saith he) that in a whole in whose wounde a *fungus* grew, that the *pericranium* was whole, and only the *dura mater* torne; for when the *durameter* is divided, nature out of hand goeth about to engender flesh upon the *pia mater*, to defend it from the aire: wherefore, if superfluous humors and flatuosities gather about the wound, they lift up the *pia mater*, and this flesh, so that a tumor like to a *fungus* is caused: saith he. 7 A tumor from flatuosity.

If you demand how it is to be cured: I answer, that the fomentation and powder set downe by him to cure a *fungus*, will serve. The curation.

Now